# SERIES

THE LEADER IN NETWORK KNOWLEDGE - WWW.NWFUSION.COM

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## **POWER**



OUR ANNUAL GUIDE
TD THE PEOPLE,
COMPANIES,
TECHNOLOGIES
AND IDEAS
GENERATING
NETWORK POWER



Managing desktop security can be challenging.
That's why there's Windows XP and Office XP.

Recognize any of those issues? Or, perhaps, all of them?
We thought so. Many of these issues can be related to your legacy desktop software; fortunately, many of them can be addressed by features in Microsoft\* Windows\* XP Professional



and Microsoft Office XP Professional. Want specific examples? The Group Policy feature in Windows XP Professional lets you define related user groups and then easily assign security settings to the group as a whole. Office XP Professional

offers Macro Virus Protection, which lets you easily configure applications to help prevent users from running the macro attachments that most viruses use. Want more reasons to upgrade? Visit microsoft.com/desktop



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The processing power you need to deploy new applications already exists within your company's walls. It's just sitting there.

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Instead of managing individual servers, imagine if your IT staff could better support your business objectives by responding in real time to the accounting rush at the end of the quarter. Or to the 10,000 customers clamoring for your newest services. They would transform themselves from systems administrators to proactive service providers.

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To see the future of the data center, visit SUN.COM/WHYNOT

SYSTEMS SOFTWARE SERVICES STORAGE



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#### The bracket game

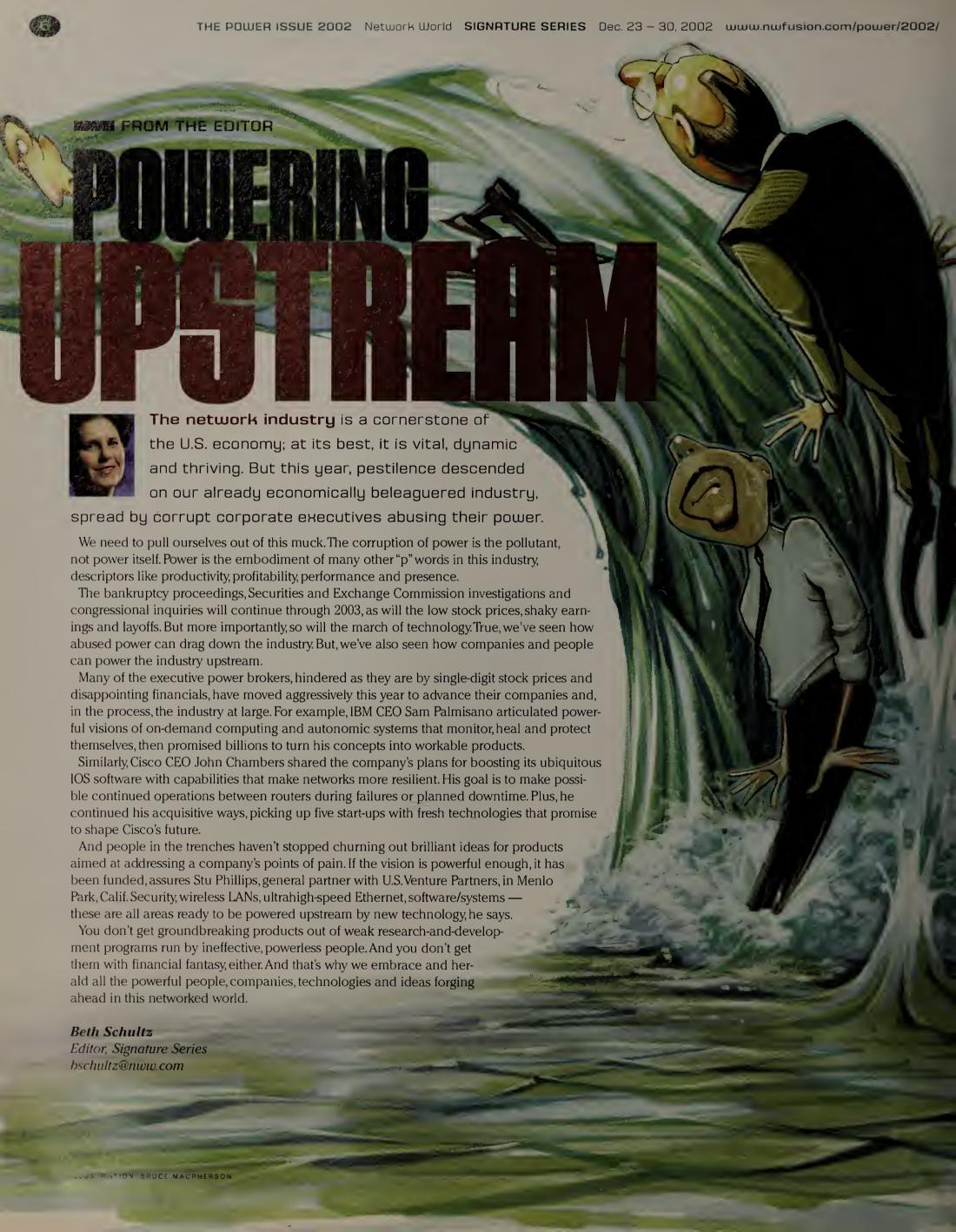
Jump online and cast your votes in our second annual bracket game, in which we pit industry powerbrokers against each other in daily showdowns from Jan. 6 through Feb. 21. We'll select contenders from our list of the 50 most powerful people in the network industry (see page 29) plus 14 other well-knowns. The daily winner moves to the next match until the voting ends and you pick the most powerful person of all.

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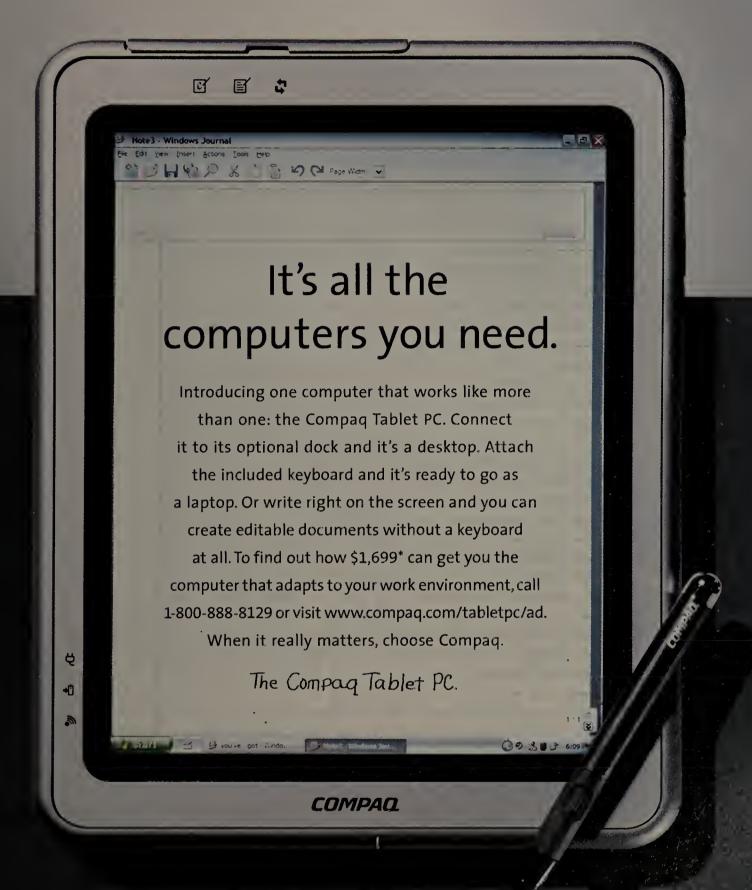
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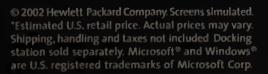
The Signature Series. The Power Issue is one of six bimonthly issues providing insights, opinions and information on the biggest trends shaping the networked world. Look for the new Extended Enterprise Issue, a guide to the latest technologies and challenges of building an extended corporate infrastructure, coming Feb. 17, 2003.

COVER ILLUSTRATION: PETER BOLLINGER











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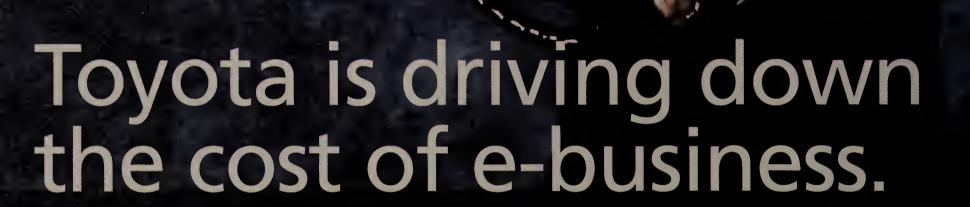


To meet ever-increasing demand for our online products and services, Toyota turned to Akamai to instantly extend the scale, performance and reach of its infrastructure at a fraction of the cost associated with traditional build-out."

Barbra Cooper

Group Vice President and CIO

Toyota Motor Sales, U.S.A., Inc.



#### Akamai Gives Toyota Motor Sales the Competitive Edge.

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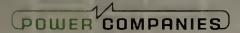
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The Competitive Edge for E-Business







Innovative. Acquisitive. Assertive. Influential. Our 2002 picks continue to push the technological edge. Not even a prolonged down economy can stop their power moves.

BY JULIE BORT

Two years into a reorganization that included the recent sell-off of debtridden cable operations, AT&T seems anchored in

granite compared with the slippery mud in which many of its competitors — especially WorldCom — sit.

AT&T is showing particularly well in enterprise data, the future for carriers all of types. These days, companies only want to place their precious packets with tried-and-true providers — preferably those that own their own facilities. That AT&T fits that description well is starting to become apparent in the company's financials. In the third quarter, a 7% growth in data, IP and managed services helped offset voice losses enough for the carrier to declare a profit for the period.

Hosting, in particular, has become a power point for AT&T. With the crash of several hosting specialists in 2001 and 2002, including that of market leader USinternetworking, AT&T has positioned itself for growth in this business.

In January it wrapped a homegrown, \$200 million network management suite around hosting customers' Web sites, adding oomph to encourage collocation users to move up to managed services. With the suite's event-correlation functions, AT&T says, it can fix performance problems before they affect a customer's Web site. And in July, the carrier struck a deal that has Sun selling AT&T Web hosting services through its massive reseller channel. By September, it even won the contract to host one of the most-visited Internet sites, the federal government's Web portal, FirstGov.gov.

Other technology high points in enterprise data came throughout the year. In April, AT&T beefed up its voice-over-ATM management options to help enterprise users operate hybrid voice and data networks more easily, even when using a combination of ATM, frame relay and IP.In July, it announced the expansion of its global network to 20 sites beyond the original 120 planned for the year; confirmed plans to deploy new worldwide end-to-end private-line services by April 2003; and said it was "on track" for global availability of its Enhanced Virtual Private Network service. And throughout the year, it boosted its metropolitan Gigabit Ethernet network and now boasts availability in 100 cities in 38 states (although some question any incumbent carrier's true commitment to Gigabit Ethernet services — see story, page 60).

And, the carrier promises continued upgrades to get its network to an all-optical state. AT&T CTO Hossein Eslambolchi has been a vocal evangelist for creation of next-generation intelligent networks. He speaks of elaborate plans to make AT&T's backbone so intelligent it will run and fix itself. A lofty vision, perhaps, but one in line with the company's power stature.



## CISCO

Cisco remains a gale-strength force in the enterprise market.

For starters, the company continues to be a buyer among a sea of for-sale signs, even if it has slowed its pace of acquisitions from the

dizzying frenzy in 2000. From May though mid-October, it bought five companies in stock deals valued at approximately \$385 million. It gained Andiamo Systems, for Fibre Channel storage switches; AYR Networks, for distributed routing; Hammerhead Networks, for IP aggregation software; Navarro Networks, for Ethernet switching ASIC designs; and Psionic Software, for intrusion-detection systems.

The Andiamo and Psionic acquisitions, in particular, represent moves into hot market areas — storage and intrusion detection — for which Cisco set its course in 2001. Success in these, plus wireless networking, are crucial to Cisco's long-term growth.

Of course, buying a start-up always has been the easy part. Turning the acquired technology into viable products and those products into market leaders — that's another story. In IP telephony, the story is finally shaping up to be a good one for Cisco. The worldwide market for enterprise IP telephony, including IP phones, hit \$171 million in the second quarter, 21% growth over the same period last year, Synergy Research Group says. Cisco's market share was 46%.

To an industrywide sigh of relief, the router chieftain posted good financials throughout the year, with a downright stellar third quarter of \$729 million in net income, compared with a net loss of \$2.7 billion for last year's third quarter (operating profit more than tripled). For fiscal year 2002, ended in July, the company reported net income of \$1.9 billion per generally accepted accounting principals (GAAP), compared with a net loss via the same accounting method of \$1 billion in fiscal 2001 (pro forma income figures vary to the point of showing a net income of \$3.1 billion in 2001). And for the first quarter of fiscal 2003, which maps to the calendar's 2002 third quarter, Cisco reported net income, via GAAP, of \$618 million vs. a net loss of \$268 million for the first quarter of fiscal 2002.

Yet, Cisco remains cautious. In May it quietly reorganized, drop-

ping from 11 to eight technology groups, in what the company calls a natural evolution. And, in September, it dropped Dell as a reseller, reclassifying the company as a competitor on the low end.

Cisco remains the network industry's bellwether.



## DELL

The gusto with which Dell successfully has attacked the enterprise network market is a testament to its industry power.

Hardly a month went by without Dell claiming more ground. Some highlights: In February, it announced

that its servers would be the heart of a new cluster-based super-computer to be marketed by Cray. In March, Dell and EMC released a trio of management software for EMC's Clariion servers. In April, Dell came out with its first blade server. In May, it released a PC with a Gigabit Ethernet-equipped motherboard and completed its second-ever acquisition, that of network services company Plural. In June, it teamed with Oracle and Red Hat to create enterprise-ready Linux.

In October, Dell and EMC announced a jointly manufactured Fibre Channel switch. By November, Dell had shipped its 2 millionth PowerConnect Ethernet switch port, having jumped into the market only a little more than a year before. And Dell threw two gauntlets at archrival Hewlett-Packard, first by signing an agreement with Lexmark to develop and produce Dell-branded inkjet and laser printers. Then, confirming summer-long rumors, it showcased its first PocketPC handheld. This after besting IBM and HP worldwide for third-quarter PC market share.

Financially, Dell was golden in 2002. In the second quarter, its worldwide product shipments rose 18%, year over year, in what was essentially still a flat market for IT spending. Like Cisco, Dell posted a whopper of a third quarter, with \$9.1 billion in total revenue, up 22%.

Others met Dell's success with wary eyes. Cisco, 3Com and HP reclassified Dell as a competitor, canceling their reseller agreements with it.

Dell is biting into the networking industry with relish.



## EMG

EMC furiously defended its perch atop the storage hill in 2002 against marauders IBM, Hitachi and HP. Losing little time in capitalizing on a relationship formed late last year, EMC in March announced a

souped-up trio of management software partly designed and tested by Dell. The software boosts the features of EMC's Clariion servers, which Dell now resells. The pair struck again in October, on the one-year anniversary of their partnership, with the announcement of a worldwide manufacturing agreement and development of a new entry-level storage-area network system.

This latter move gives credence to EMC's years-long assertion that it will gobble up the low-end storage market, while the former gives EMC an entry into Dell's internal business and manufacturing efficiencies — widely acknowledged as the best in the business. Lessons learned from Dell here should prove valuable, as financials remain EMC's Achilles' heel. It is burdened with two years of red ink, ongoing layoffs and a steadily dropping stock price that hovered around \$6 in mid-December from a high of about \$18 in January.

Still, EMC got a jump on competitors in September when it released a version of ControlCenter that automatically provisions capacity from a pool of multivendor storage devices based on



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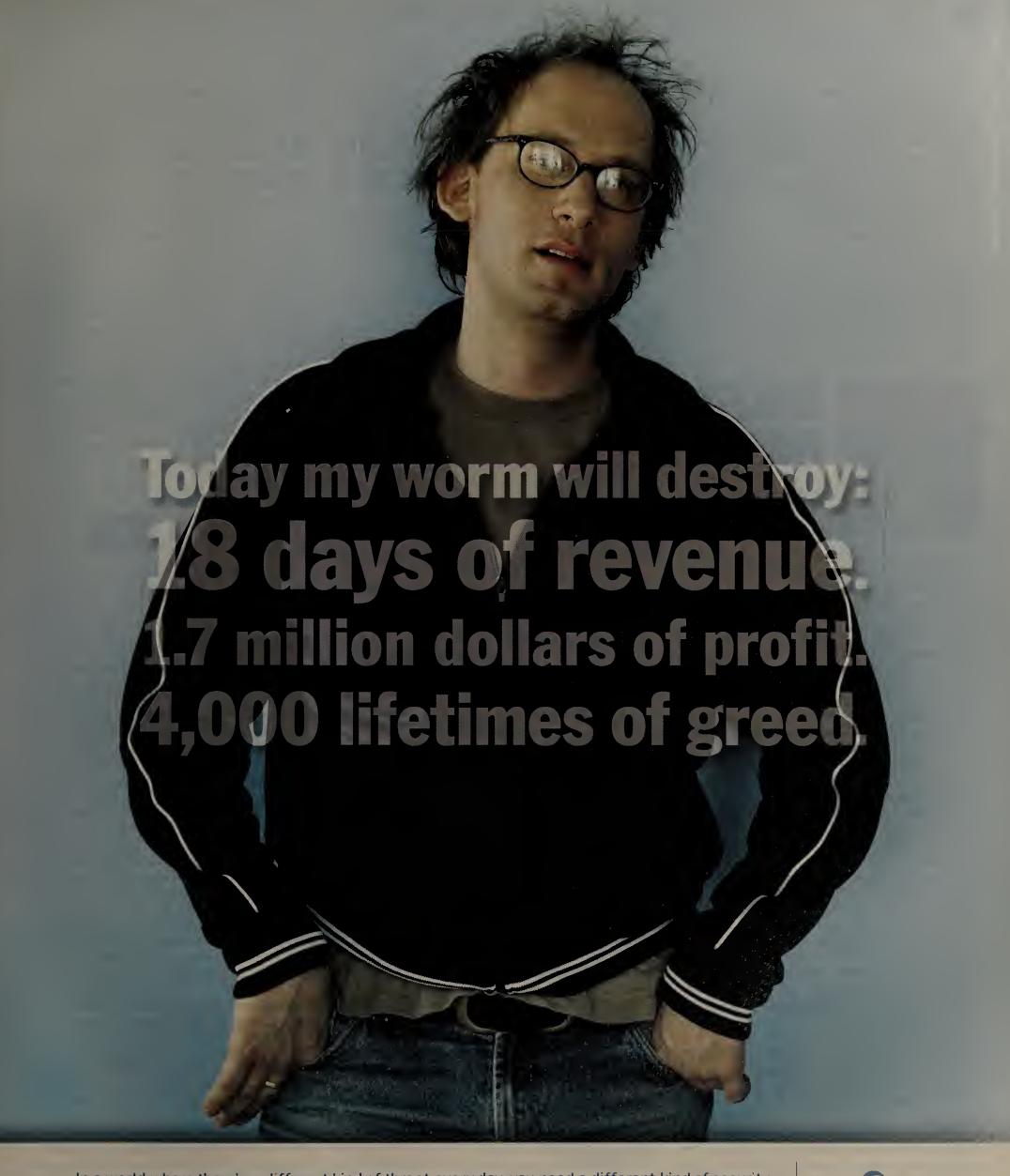
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predefined business rules and application needs. ControlCenter is one of four products comprising Automated Information Storage multivendor management software, the obvious main hope for EMC's goal of having software account for 30% of sales by 2004, compared with less than 25% today.

EMC has called in some heavy hitters to help it meet that software goal. This year, it hired Chris Gahagan, a respected storage industry veteran most recently with BMC Software, and Mark Lewis, formerly a storage executive with major rival HP. Gahagan is senior vice president for EMC's Storage Infrastructure Software; Lewis is executive vice president of new ventures and CTO.

Such moves led users to expect EMC to sweep power away from its rivals in 2003, according to this year's Powerometer survey (see story, page 16).



## HEWLETT-PACKARD

Maybe this new behemoth of a computer manufacturer has a lot to prove. But for the moment,

HP can bask in the glory of a hard fight won and the sheer size of its new self. The merger with Compaq, completed in May, instantly gave the computer vendor revenue comparable to only one other in this industry, IBM.

Still, HP was not so distracted by its new self to ignore its technological future. It defended itself in storage and progressed well in network management, Linux and wireless.

In storage, the year's notables include the November announcement of software that delivers on the concept of industry-standard, automated management of multivendor storage. At that time, HP also showcased products that comply with the Storage Networking Industry Association's Storage Management Interface Specification, once known as Bluefin. And separately, HP inked an agreement to swap APIs with Hitachi to enable multivendor management.

In network management, HP began pitching a powerful service-management ideology for OpenView. The gist is to convert OpenView into a business process management system that tracks a business service, such as e-commerce, across applications and hardware, rather than as independent and unrelated pieces. This dovetails with its Utility Data Center (UDC) architecture for combining grid computing with system management and security software. UDC, which HP promoted heavily this year, is intended for companies that build their own grids, rather than those using the hosted model that IBM promotes.

In servers, HP introduced a single-port 10G bit/sec blade that helps position it as a high-end switching player. This moves it away from the growing image that it merely was duking it out with Dell for the low-end, commodity market.

As for Linux, HP underscored its commitment with numerous yearlong product moves: a disaster-recovery storage-product package; a more secure version of the operating system; various servers; and a service to help migrate users from Unix to Linux. However, the company sustained a blow to its image as an open systems vendor when Bruce Perens, senior strategist for Linux and open source code, left in September, citing conflicts with management over his open source political activism.

Partnerships also Ilavored HP's year. It inked two agree-

ments with Microsoft, one a multiyear, multimillion contract to manage product technical support and the other a \$50 billion joint marketing agreement to develop and promote .Net. In April, it demonstrated streaming media on mobile phones from its partnership with NTT DoCoMo; in November, it partnered with Nokia to create a package for remote-asset management over wireless links.

But HP still has much to do to smooth out the merger. In November, former Compaq CEO Michael Capellas resigned his post as HP president to become CEO of beleaguered WorldCom. Some pundits think the move was disadvantageous to the newly merged company, which could have used Capellas' operational skills. This announcement followed news from a September filing with the Securities and Exchange Commission that the total number of jobs HP will cut by October 2003 would be 16,800 (8,200 from HP divisions and 8,600 from Compaq units), some 12% more than the 15,000 jobs that Fiorina announced at the deal's close.

When it comes to the networking industry, size isn't everything, but it sure helps.



## RM

Among all the vendors on this list of power elite, IBM has best used this period of industry unrest to improve its relative power position. Under the leadership of new CEO

Sam Palmisano, Big Blue heaved forward in all the industry hot spots this year: integration services, Linux, security, storage, Web services, wireless and grid computing.

Clearly, the biggest muscle it built in 2002 is in integration services, with the \$3.5 billion acquisition of PricewaterhouseCoopers Consulting in July. Other feats here include winning a \$4 billion outsourcing contract from American Express and securing an eight-year, \$1.2 billion outsourcing deal from Nextel.

Among abundant open source movements was the much-touted delivery of a Linux-based, lower-cost mainframe in February.

As for security, in January IBM inked a deal with Veri-Sign to create a managed "entitlement service" that will combine online authentication, digital credentials and policy management with customer and partner data. In April, it again teamed with VeriSign and Microsoft to publish the Web services security specification, WS-Security; and released the ThinkPad T30 laptops, which feature, among a plethora of new technology, integrated encryption processing chips that store users' keys and certificates.

In storage, it forged a multiyear alliance in April with Hitachi for storage networks open-standards technologies, then sold its hard drive businesses to Hitachi for \$2 billion in June. And, like EMC, it exchanged APIs with HP.In wireless, among other moves, IBM and Nextel agreed to co-develop enterprise mobile e-business products, a deal outlined as part of the outsourcing contract announced in January.

In grid computing, an area of obvious long-term use to server vendors, Big Blue released new software, storage and servers, a development framework known as grid services, and a promise in February to grid-enable its "entire product portfolio." IBM also inked two \$200 million-plus supercomputer deals: a nine-year contract with the National Centers for Environmental Prediction, and one with the Department of Energy to build what

IBM says will be the fastest supercomputer to date.

The downside of 2002 was weaker, albeit still profitable, financials. IBM laid off 1,400 microelectronics employees and 15,600 from Global Services, but gained 30,000 through the PricewaterhouseCoopers Consulting acquisition. Growth, it hopes, will come from the middle market

IBM's research continues to blossom, too. In January it announced that it was the entity awarded the most U.S. patents for the ninth consecutive year. Its 3,411 patents in 2001 marked the first time more than 3,000 U.S. patents were granted to one holder in one year.

Plus, IBM launched its engrossing Autonomic Computing initiative for making all of its products able to configure, heal, optimize and protect themselves. Out of this, IBM says, will come on-demand computing for which, in October, Palmisano committed \$10 billion. Ondemand computing turns the infrastructure into a virtualized, utility-like service. It crosses borders between a company and its partners, is more flexible and views entire business services, not just hardware and bits of code, as its building blocks. IBM's iron-pumping moves throughout the year illustrate just how much muscle it has to flex.



## NTEL

Like a powerful engine, Intel's under-the-hood technologies continually move the network industry. Its ever-more-powerful chips

have given Linux the oomph it needs to be looked at seriously by corporations. Its support for wireless, storage and blade servers has fueled emerging hot spots.

This year, Intel released the 2G Xeon Processor MP server chip (formerly known as Gallatin). Speedier, with more cache memory than the previous Xeon DP, it is the result of a new manufacturing process that creates thinner, thereby faster, connections between components. On the desktop side came the Pentium 4, with its Hyper-Threading technology and whopping 3.06-GHz CPU that lets PC makers build machines with exceptional performance. Intel says Hyper-Threading can boost speeds of multithreading applications by 25%.

Always a threat, Intel's speedy chips this year chased RISC-based vendors right off the course at times. The well-publicized move in January by securities firm E\*Trade to yank out Sun systems for Linux/Intel-based systems is a case in point. Sun was forced to gear up by announcing an Intel Itanium-2 Linux server (which directly competes with its bread-and-butter RISC and Solaris wares). Then in October, Sun further bowed to heavy user pressure and agreed to port Solaris 9, launched in May, to the Intel platform.

In February, Intel released a controller that puts two Gigabit Ethernet ports on one chip. These smaller chips are sure to spur this technology's adoption. And in September, it agreed to collaborate with IBM on blade server chip manufacturing. Some analysts predict this partnership of silicon powerhouses could quickly lead to domination in the young blade server market.

As for wireless nets, particularly 802.11b, Intel means business — \$150 million, to be exact. That's the sum the chip maker promised to invest in seeding wireless start-ups. When announced in October, Intel already had spent \$25 million in support of more than 10 such companies. But that's a fraction of Intel's network technology venture moves. Its \$500 million lutel Communications Fund, established in 1999, had made

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## Are the PCs you own costing more than the ones you can buy?



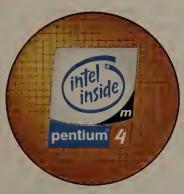
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#### FOUR COMPANIES

more than 80 investments in 17 countries as of October, Intel says.

Like most others, Intel rode some bumps in 2002. In October, it lost a second patent infringement suit over its Itanium processors to Intergraph. The first, in April, cost Intel \$300 million; the second might cost \$150 million to \$250 million. These hits come on top of basically flat revenue this year over last.

As one result of weak financials, Intel pulled the plug in June on its Web hosting operations, which had grown from two data centers at the business' 1999 launch to eight in 2000. Intel says it will use the data centers internally. Also in June, Intel stepped away from InfiniBand, saying it would leave those chips to others, including Mellanox Technologies, in which it has an equity investment.

Speed bumps aside, Intel's work in the industry makes it a "stealth aggressor," Forrester Research says. The firm applies this term to companies that use technology to slingshot themselves ahead of competitors during turbulent times.



## **MICROSOFT**

Microsoft's immense hoard of industry power remained as safe as ever in 2002.

The company's share of server and desktop operat-

ing systems is locked tight, and it is even gaining share in the PDA market. In the third quarter of 2002, it had a 30% share of that market, compared with 28% last year, with rival Palm dropping to 48.6% from 50%, Gartner says. And angry protests over the licensing scheme Microsoft announced in 2001 didn't hurt the company's power to implement it this year, albeit with a few tweaks

Microsoft pushed hard into several emerging areas, namely handheld/wireless, Web services, CRM, instant messaging, even storage. Its move into smaller form factors itself took many forms, from the \$96 million cash it spent for location-based services software maker Vicinity to the launch of the Tablet PC operating system. And it spent the year readying the world for Office 11, due out in mid-2003. This will be the software giant's pivotal move into its Internet-based applications strategy, .Net. The suite supports XML, which Microsoft says it hopes will turn Office into a universal client that could front-end any XML-supported back-end system.

To that end, Microsoft pounded on Web services doors, even though in April it lost a moving force behind .Net — its COO, Rick Belluzzo, who took the CEO position at Quantum. In September, Microsoft and HP signed a \$50 billion joint marketing agreement to develop and promote .Net. And the ongoing saga of the Web Services Interoperability Organization (WS-I) underscored Microsoft's growing advantage over its biggest Web services rival, Sun. W-SI, which Microsoft, IBM, BEA Systems and others founded in February, now boasts 150 members. Microsoft holds one of nine permanent board positions and so far has kept Sun from that roster. (However, it seems likely that Sun will grab one of two new board seats next year.)

The software maker also shoved instant messaging further into the enterprise with announcements such as the one in November for MSN Messenger Connect for Enterprises, a service to extend and manage MSN Messenger across the firewall. Microsoft stepped into CRM, too, announcing in July an application for small and midsize businesses. Gunning for storage, in

September it announced storage management software, expected to ship with .Net Server in 2003.

Perhaps the best example of Microsoft's unflagging power is its continuously black-ink financials. It reported revenue for fiscal 2002, which ended in June, up 12% over 2001, at \$28 billion, with a net income of \$8 billion. For its first-quarter 2003, which maps to the calendar-year third-quarter 2002, it reported a 26% year-over-year increase in revenue. And as rivals such as IBM, HP and Sun choked out news of more layoffs, Microsoft laid out plans in mid-July to hire 5,000.



## **SYMANTEG**

Symantec graces this year's list of most powerful companies because of its growing dominance of the security market and its improved service to the

enterprise in these times of need.

In the cutthroat security market, Symantec is expanding its presence. Last year, Symantec established itself as the vendor with the largest share of worldwide security licensing revenue — a status Gartner and IDC expect it to hold for 2002, too. Even President Bush understands that kind of power — in September, he appointed Symantec CEO John Thompson to his security advisory organization, the National Infrastructure Assurance Council (see related story, page 52).

But the trifecta of acquisitions Symantec pulled off in August tops the list of the company's 2002 accomplishments. It bought Recourse Technologies, Riptech and SecurityFocus. From these it grabbed technology for stronger intrusion detection, security monitoring and security alerts, respectively. This after its first acquisition of the year, only a month earlier, of Mountain Wave, which gave it a security information management tool.

Symantec wasted little time incorporating these purchases into sellable products and services. In October, it announced its Security Management System 2.0, based on the Mountain Wave technology. A new version of the security alerts subscription service, DeepSight Alert Services 4.0, from the SecurityFocus acquisition, rolled out in November. While Symantec already had an intrusion-detection system of its own, it ditched it in favor of Recourse's ManHunt technology. It showed strength by acquiring what was shaping up to be its most formidable rival in this promising, emerging field and recognizing better technology when it saw it.

Products such as Symantec Enterprise Firewall 7.0 also are helping the company push its edge in more traditional wares. The full-inspection firewall, released in February, supports the Advanced Encryption Standard, speeds of up to 1.5G bit/sec, easier VPN deployment and secure videoconferencing through the firewall.

True, Symantec suffered a couple of black eyes when security watchers issued alerts on holes found in its firewall products in the summer and fall. But Symantec responded quickly with patches and its own alerts, or in one case, worked with the alerting organization to postpone sounding the general alarm until it had patches at the ready.

On the desktop side, Symantec began offering a client that integrates antivirus, personal firewall and intrusion-detection technologies. This product will help companies shore up network clients, which are "the most-costly and least-secure IT asset," the company says. Managed security, the emerging area that pundits had been quick to dismiss, has been booming for Symantec, too. It signed 55 new deals in its third quarter, ended Sept. 27.

With business booming, strong financials and a hand on the security technologies of the future, Symantec is a power on the rise.



## VERIZON

The momentum of Verizon's power carried it through 2002 like a tropical storm heading for shore. If all goes as Verizon's direction indicates, companies soon will

get another financially stable national provider from which to buy services. In November, this incumbent of the Northeast's local phone service announced plans to launch business-class, voice and data long-distance services in its traditional territory early next year. It has won approval to offer long-distance services in all of its 15 local service areas except for three — Maryland, West Virginia and the District of Columbia. Those it expects to add during the next several months, officials say.

It then wants to invade 56 markets nationwide with a premium business-class service, competing head to head with the likes of AT&T, WorldCom and Sprint. In addition to basic voice and data, it will offer integration services such as network management, data storage, business recovery and security. This, on top of other enterprise data services it announced this year, such as a managed service to provide companies with the use of a Cisco-based voice-over-IP network. Verizon made international headway, too. In March, it rolled out frame relay and private line on its international network, which lets multinational companies connect to branch offices in select cities throughout Europe, Asia and Latin America.

Through its subsidiary, Verizon Wireless, the carrier whirled all over wireless and 3G. In February, it launched its limited-availability high-speed service, and is racing against AT&T and Sprint to bring 3G coverage to cities nationwide. Gateway, through a deal inked in October, is reselling this Code Division Multiple Access service. Also this year, Verizon Wireless forged a couple of agreements with AOL. The first brings AOL content and services, from headline news to e-mail access to cell phones. The second offers Instant Messenger to its wireless subscribers, letting chat occur between buddies on PCs or phones.

Verizon's run-in with the Recording Industry Association of America (RIAA) has powerful implications, too. In July, the RIAA subpoenaed Verizon, pressing it to reveal the identity of an ISP subscriber accused of giving away copyrighted music as MP3 files. Verizon refused to snitch, and in October, 12 groups, including Yahoo and other large ISPs, submitted arguments in support of Verizon's position. Web privacy has gained a powerful ally.

The one downer is Verizon's crashed plans to own a Tier-1 backbone. Its main partner in that arena, Genuity, is now in Chapter 11 bankruptcy, as part of a purchase plan that Level 3 Communications announced in late November. Verizon this summer walked away from its opportunity to buy 80% of Genuity, although it is still a lender to it.

Fiscally these moves are paying off. Although revenue was essentially flat for most of the year, even as it poured on the capital investments. In the third quarter, the company reported \$17.1 billion in total operating revenue and \$2.1 billion before nonrecurring items in earnings. Revenue rose by a little less than 1% overall.

Telephone company competitors had better grab their raincoats. ■

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- Layer-3 Aware Class of Service Prioritization
- Advanced Management via Browser or Industry-Standard CLI
- 3-Yr Next Business Oay Part or Unit Replacement<sup>52</sup>

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Dell PowerConnect 3248 Outperforms the Cisco Catalyst 2950 and 3COM SuperStack 3 Switch 4400 by up to 45% in Layer 2 Throughput Tests. Tolly Group Report #202149 — September 2002

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In our annual survey, r optimistic that new t

BY JULIE BORT

Realism needn't exclude optimism, even in a tough economy when these concepts seem to occupy separate quadrants of the philosophical plane. True, the network industry still is nursing a hangover from the optimism binged on during the Internet bubble. Network executives (who always have been realists) know the cure: new technology.

> While a company can't ignore its financial performance, they say, honestto-goodness new technology is more important to improving power in the eyes of the IT customer than encouraging short-term financial reports.

That's the message gleaned from this year's Powerometer survey of 250 Network World readers. Specifically, nearly half the participants agree — 14% strongly — with the statement that the network industry is more powerful than other industries (such as energy, accounting and financial services) also battered in this downturn. Likewise, half say a company's ability to pro-



Respondents nevertheless issued a "power correction" in this year's survey. Using a scale of 1 to 100, readers rated a company's power, with 100 being the most powerful. Comparing this year's means — the Power Ratings with 2001's reveals that readers don't consider a single company, mighty Microsoft and Cisco included, as more powerful this year than last. In fact, the Power Rating for all companies dipped to a five-year low.

Neither do readers see vendors using this economic slowdown to usurp power from each other. The top 10 companies remain in nearly identical rankings as they stood in 2001, with 3Com being an anomaly. 3Com jumped from No. 13 to No. 10, reaching top-10 status for the first time since 1999. But this is less a credit to 3Com than a result of large power penalties placed on troubled vendors, such as those in the anemic telecom sector and those with scandalous financial problems. Last year, EMC rated

#### 2002 Power Ratings

Using a scale of 1 to 100, the 250 readers who participated in our annual Powerometer survey did not rate a single company more power this year than last.

2002 Rank	Company	2002 Power Rating	2001 Power Rating	Change	2001* Rank
1	Microsoft	74.5	77.2	-3.5%	1
2	Cisco	73.8	77.0	-4.2%	2
3	Intel	66.3	70.6	-6.1%	3
4	IBM	63.2	68.3	-7.5%	4
5	Sun	59.3	62.7	-5.4%	6
6	Oracle	58.8	64.1	-8.3%	5
7	Dell	57.6	61.8	-6.8%	7
8	AT&T	57.4	61.5	-6.7%	8
9	Hewlett-Packard	56.0	60.9	-8.0%	9
10	3Com	52.8	56.0	-5.7%	13
_11	Verizon	<b>52.</b> 6	56.6	-7.1%	12
12	Nortel	<b>52.</b> 2	56.0	-6.8%	14
13	EMC	51.1	56.7	-9.9%	11
14	Computer Associates	50.7	50.9	-0.4%	24
15	Sprint	49.5	55.6	-11.0%	15
16	SBC	47.9	54.1	-11.5%	19
17	BellSouth	47.5	54.3	-12.5%	18
18	Novell	46.6	50.0	-6.8%	25
19	Qwest	42.9	53.5	-19.8%	21
20	WorldCom	36.7	55.6	-34.0%	16

<sup>\*</sup> Survey included 25 companies in 2001 SOURCE NETWORK WORLD'S 2002 POWEROMETER SURVEY

# 

ders rate no vendor more powerful this year than last. But they remain nologies will help the industry regain its former luster.

No. 11, ahead of 3Com, but thanks to almost two years of operating losses, a sagging stock price and probes into its accounting practices, readers docked EMC's Power Rating by about 10%.

Yet, readers named EMC the storage vendor most likely to increase power in 2003. This is thanks to its growing partnership with Dell and the boosting of its executive payroll with some former big rivals. Likewise, readers are similarly optimistic over the chances for AT&T, Dell and Verizon to increase power over their competitors in the next 12 months (see related story page 9).

In its entirety, the survey reveals that network executives still believe in technology's power to change the world — just as it always has. But, they know these disruptive technologies take hard work, not imaginative accounting.

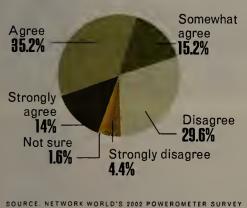
Readers reduced the Power Ratings of six companies by about 10% or more, while boosting no company's rating.

2002 Power Rating	Company	2001 Power Rating	Power Rating change 2002 EMC 9.9%	1
51.1	EMC	56.7	Sprint	
49.5	Sprint	55.6	SBC -11.5%	
47.9	SBC	54.1	BellSouth -12.5%	
47.5	BellSouth	54.3	Qwest -19.8%	
42.9	Qwest	53.5		
36.7	WorldCom	55.6	WorldCom -34%	60

SOURCE: NETWORK WORLO'S 2002 POWEROMETER SURVEY

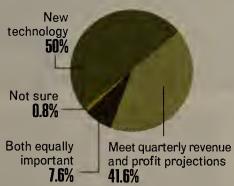
#### Is the network industry more powerful than others?

Despite across-the-board company Power Rating downgrades, most readers agree that the network industry is more powerful than industries such as energy, accounting and financial services.



#### Is new technology or strong rinancials the better path to rubure power?

Half of readers surveyed said developing new technology is more important than meeting financial projections when it comes to determining a company's future power.



#### Steady rankings

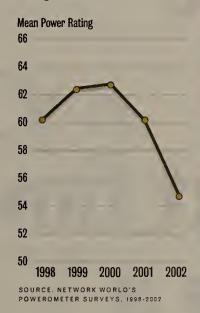
Like racecar drivers paused by the yellow flag, top vendors are holding fairly steady in the power rankings of last year. 3Com alone moved up three paces into the top 10, a spot it hasn't occupied since 1999.

2002		2001
Rank	Company	Rank
1	Microsoft	1
2	Cisco	2
3	Intel	3
4	IBM	4
5	Sun	6
6	Oracle	5
7	Dell	7
8	AT&T	8
9	Hewlett-Packard	9
10	3Com	13

SOURCE: NETWORK WORLO'S 2002 POWEROMETER SURVEY

#### Ratings droop

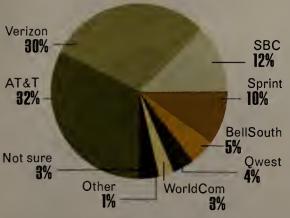
Readers find network vendors less powerful now than in any time in the last five years.



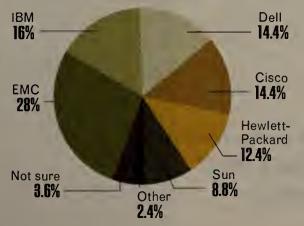
The opportunists

#### Which competitors are most likely to increase their power over the next 12 months?

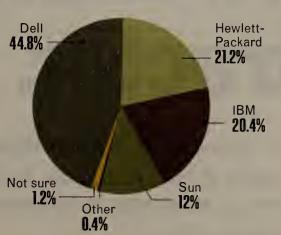
Readers see ATET and Verizon as the two datacom providers most likely to snatch power in 2003.



Battleworn, sure, but more readers name EMC as the storage vendor more likely to increase power in 2003 than any other.



Almost half of readers surveyed view Dell as the computer system maker best poised to grab power in 2003.



In our amual Poweromeser survey, 250 readers rank the power of network ven dors and their CEOs

Through a phone survey conducted by Research Concepts in Berlin, Mass., we asked 250 readers to rate company and CEO power, using a scale of 1 to 100, with 100 being the most power. We then compared this year's mean - dubbed the Power Rating — with last year's, From this we calculated the percentage of change in a company's, or individual's, year-over-year Power Rating. The purpose was to measure network vendor and CEO power in the eyes of the user community (see story, page 54).

We surveyed readers from a variety of industries, with the finance, government, healthcare services and manufacturing sectors providing some 60% of participants. The remainder came from seven other industries, including aerospace and utilities. All readers held IT titles in the network field and worked at companies with more than 1,000 employees, half for organizations that employed 10,000 or more people. (See demographics, page 55.)

This year, we reduced the number of vendors and CEO survey subjects from 25 to 20 We felt this change better reflects hose who are watch-en as industry benchman of power. However this change did attect the ranks of the panies and CEOs the 2002 results ticularly those landed below 3 0. For that reas have not aft the shift in rank to 10.2002 To and shift in puwe

SOURCE NETWORK WORLD'S 2002 POWEROMETER SURVEY

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POWER OF TECHNOLOGY

# SERVER MAGIC

New automated server configuration management software promises to lessen your staff's workload in the data center while boosting server security, configuration consistency, and availability.

BY DENISE DUBIE

**Network downtime** is not an option for Priceline.com. The Web-based "name your price" travel services company — widely known for its comic ads featuring "Star Trek" legend William Shatner's crooning — cannot separate business from technology. Priceline's IT infrastructure, applications and supporting software tools are the business.

Specifically, the company's bottom line depends directly on 500 Microsoft Windows NT and Unix servers staying available to support millions of customer page views per day.

"Technology is the foundation of our business. If the Web site is closed, then the store is closed," says Ron Rose, Priceline ClO. The Norwalk, Conn., company estimates that one hour of downtime costs about \$50,000.

So last year when a slew of new companies started making claims about reducing manual tasks, speeding problem resolution, automating server configuration, and providing consis-

Travel services company Priceline.com takes server uptime so seriously that it took off after automation configuration management software as soon as it heard about the new category, Glo Ron Rose says.

tency and security across data centers, Rose paid attention. "We take mean time to repair on our servers so seriously that I had to investigate. The store cannot appear closed to any customers at any time," he says.

BladeLogic, a systems and server management start-up, stood out among the companies Rose investigated. The company's BladeLogic Configuration Manager software modules provision, analyze and manage networked servers from a secure console. The software automates many configuration processes that normally are handled manually, such as the application of patches or the collection of inventory information. Rose says most appealing is that BladeLogic provides cross-platform management.

"Data center architectures are very problematic from an administrative perspective, so tools that help unify the administration of these heterogeneous environments are the wave of the future," he says.

Priceline runs two Web site infrastructures across three physical sites — corporate headquarters and two data centers — with a total of 400 production WinTel or NT-based servers and about 100 big Sun servers for Oracle databases. Rose deployed BladeLogic about nine months ago in the data centers and has run the software in full production mode for about six months. With BladeLogic, "there are fewer detectable errors and a greater level of security across servers," he says.

And, while Priceline has yet to perform a return-on-investment study, from a cost standpoint, Rose says he can control more servers with fewer people because manual configurations have been eliminated.

#### Moonlit servers and spinning plates

Besides BladeLogic, companies such as CenterRun, Jareva, Moonlight and PlateSpin have emerged in the past 18 months or so promising to reduce staff hours and eliminate configuration errors when provisioning data centers.

And established management software vendors such as Hewlett-Packard, Novadigm and Marimba have enhanced their software to distribute patches automatically or configure servers consistently across data centers, for better security and availability. These management vendors are responding to a number of factors: the shortage of skilled IT workers; the need to eliminate server configuration errors, which can lead to network downtime, on e-business and e-commerce Web sites; and the evolution of software toward automation features.

Managed services provider Loudcloud even changed its business model and its name to get into the automated configuration management game. The company, now called Opsware, sold its managed services business to EDS, which also is Opsware's largest customer. Opsware's System 3 platform provides the data center management and automated server configuration Loudcloud once delivered as a service.

See Server, page 22

#### GETTINE SMART

stablished and start-up rendors alike have added automation features to their server provisioning and configuration management software tools. The list that follows is a sampling of what is available.

## Provisioning and maintenance

#### **Vendors:**

Anduva,
BladeLogic,
CenterRun,
Contrado,
Jareva,
Moonlight,
Marimba and
Platespin

#### What they do:

Automate the deployment of hardware, operating systems, patches and application.

### How they work:

Maintain environment configuration data, building and maintaining it by tracking changes and updates made through the tool itself.

### Resource virtualization

#### Vendors:

Blackstone
Computing
HewlettPackard
Platform
Computing and
Terraspring
(acquired by
Sun)

#### What they do:

Dynamic ally allocate Lean nology To

Continued

## The Enterprise-Class Network Next Door

Broadband access gives small sites the benefits of enterprise-class network services

#### NETWORKING TECHNOLOGY ENABLES ENTERPRISE

employees to increase productivity wherever they work—at a headquarters campus, a distant branch office, even from home. However in the past, the options were limited for high-speed, secure network access by small remote sites and teleworkers. Enterprise network managers had to weigh the costs of secure but expensive leased lines or integrated services digital network (ISDN) circuits against the needs of individual sites and users. In many cases, these costs could not be justified, leaving the default choice of dialup connections—but with the trade-off of slow speeds and user frustration.

Cisco 800 Series and SOHO 90 Series Routers

Today, network managers can consider supporting access to enterprise networks via economical, high-speed Digital Subscriber Lines (DSL) and broadband cable services. Although

services have received much attention home PC users, enterprises can leverage them as an affordable



virtual private networks (VPNs) and other IP-enabled services to teleworkers and small remote sites. Yet before they will support a large number of broadband connections, network managers need assurance that the critical issues of security, quality of service (QoS), manageability, and scalability are addressed adequately by network access solutions.

The key is finding the right networking products for broadband access in small offices and employee homes that integrate enterprise-class security and management features. Cisco Systems helps enterprises and users get the most from broadband connections—offering market-leading access routers with integrated security features and options for VPN client software as well as powerful central-site routers, VPN concentrators, firewalls, and management systems.

#### More Than Just a Need for Speed

When it comes to remote network access, of course speed is important. Depending on the broadband speeds supported by service providers

> in each location, remote users can enjoy access to data applications at the same performance levels as at a corporate office. For many

locations, the performance and affordable price make broadband services an attractive replacement for leased lines and ISDN circuits.

However, when considered from the perspective of overall enterprise needs, broadband access can

enable many more networking services. For example, broadband provides the performance necessary for applications such as IP telephony for off-site phone

extensions and IP video for training and internal broadcasts.

To get the most from these applications, networking solutions must provide the robust features for security, QoS, IP telephony, ease of use, scalability, and manageability required for VPNs that may eventually connect hundreds or thousands of sites.

End-to-end security. To be truly effective, security must be embedded throughout the enterprise network. Cisco Systems delivers a comprehensive portfolio of advanced network security solutions, including extended perimeter security, intrusion detection, identity management, and security management.

Integrated and managed firewall and VPN capabilities. The security design and policies implemented at headquarters should be extended to even the smallest sites. Remote management to assure consistent security policies and proper firewall operation at a remote site are also essential for protecting network access.

Quality of service. For advanced applications, QoS capabilities can fine-tune traffic flow, assuring high performance for critical applications and a satisfactory user experience. Quality of service also provides the bandwidth management required to support smooth delivery of voice and video communications.

Extend Cisco IP Telephony services. By combining a broadband cable or DSL connection and the right access router, an enterprise can bring the cost savings and application advantages of IP telephony to users outside of the corporate campus. High-speed encryption and QoS features in the Cisco 800 Series (www.cisco.com/go/830) routers allow corporations to extend IP telephony to remote

> sites. An IP phone can be connected to a port on the router's 10/100 LAN switch, then utilize the VPN tunnel initiated by the router connect to

corporate telephone system.

To learn how Cisco VPN

solutions can benefit

your network visit

www.cisco.com/go/pix

Easy setup and configuration. Easy, reliable, and consistent setup is essential for broadband access equipment. An access router should be easy to install and activate by non-technical users, with a configuration that is tailored to the enterprise's policies and network parameters. Cisco's remoteaccess routers offer options for automated or

pre-configuration, or allow the user to easily set-up a custom configuration with the Cisco Router Web Setup tool.

Management from a central location. Management features in the Cisco IOS® software provide a common, familiar foundation for technicians to manage Cisco remote-access routers from the headquarters site. Through an in-band or out-of-band management link on the access router, a technician can efficiently download

Cisco Systems offers many choices for connecting small sites and

teleworkers to an enterprise VPN over a DSL or broadband cable link

Teleworker with Cisco

Router and IP Phone

must support simple, consistent processes for adding new sites without negatively impacting network performance, compromising security policies, or becoming a burden for IT personnel.

#### Choosing a Broadband Solution for Small **Remote Sites**

Together, these essential access features point to a sophisticated, business-class router as the device of choice for small remote sites or teleworkers

> using broadband connections to a large enterprise VPN. For organizations that do not require all of these features, security appliances or personal firewall and VPN client software may offer adequate, lower-cost choices for network access from a home or small office.

The Cisco 830 Series of secure broadband

routers is ideal for providing VPN connectivity to small remote sites and teleworkers. These routers deliver a wide range of integrated security features including hardware-accelerated, high-speed encryption and a stateful firewall as well as advanced QoS features for high-quality data, voice, and video applications. The Cisco 830 Series also supports easy deployment and remote management with Cisco IOS software features.

Cisco also offers the Cisco SOHO 90 Series (www.cisco.com/go/soho90) secure broadband

> routers, which provide firewall and software for VPN connectivity by teleworkers

users. These affordable routers are easy to set-up, yet provide business-class security features for small offices connecting to the Internet.

#### Choosing a VPN Solution for the **Headquarters Site**

Equipment that terminates user VPN tunnels at the headquarters site must address requirements for manageability and scalability. The enterprise-

Cisco offers several enterprise-class routers for connecting VPN users at a central site. Depending on requirements, routers such as the Cisco 7000 family or Cisco 3700 Series can deliver a turnkey deployment with all interfaces, software, hardware, and the browser-based Cisco VPN Device Manager software. The world-leading Cisco PIX® Firewall Series is a family of purpose-built security appliances that deliver enterprise-class security services such as a stateful-inspection firewall, IPSec VPNs, intrusion protection, and more. Product models range from compact, desktop firewalls for use in small sites

class routers, VPN concentrators, and firewalls

from Cisco Systems give enterprises a choice of

devices for meeting these requirements.

Cisco VPN 3000 Series Concentrators provide high-density connections for VPN users. This product family includes models to support large organizations with up to 10,000 simultaneous remote users. The Cisco VPN Client, with unlimited distribution licensing, is provided for all versions of the Cisco VPN 3000 Series Concentrator.

to gigabit firewalls for consolidating VPN access

at an enterprise headquarters site.

## Secure VPN Tunnels over DSL or Cable **Small Remote Office** with Cisco PIX Firewall **Small Remote Office** with Cisco Router and IP Phones

To Download a Cisco

White Paper on VPNs Visit

Teleworker with

Cisco PIX Firewall

policy updates, change configurations, and diagnose problems.

VPN

Firewall Concentrator

Additionally, the CiscoWorks product family provides a collection of powerful management applications to configure, administer, and maintain a Cisco network infrastructure. The CiscoWorks tools improve the accuracy, efficiency, and effectiveness of network administrators and operations staff while increasing overall network availability with tools for proactive planning, deployment, and troubleshooting. The CiscoWorks

family of products helps manage the network, devices, and users in a centralized, consistent manner. With

Corporate

Headquarters

PIX

OR OR

Cisco

Router

Cisco Easy VPN features in Cisco routers and security products, the main VPN concentrator can easily connect to remote-site routers to push updated VPN policies, which reduces an ongoing activity for VPN management.

Scalability. Growing numbers of remote connections present new challenges for an enterprise network. The overall VPN solution

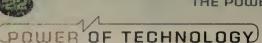
#### Making the Right Investment for Broadband Access

Enterprise users already enjoy high levels of network performance and rich network services when they work at a large site. For enterprise network managers, the question becomes: Would you make any less of an investment for network access and capabilities at your remote sites?

Making the right investment means evaluating the key criteria of security, QoS for multimedia applications, manageabili ty, and scalability. VPN access solutions excel in meeting the criteria in order to keep pace with the growing adoption of DSL and broadbank cable services by enterprises.

Cisco's product leadership and innovation delivers the right solutions is getting the most from broadband access VPNs.

www.cisco.com/go/securevpn and small sites with up to five



#### Server, continued from page 19

These companies all offer one form or another of server configuration and change management software, an IT area that vendors and users either overlooked or underestimated in the past as they rushed to provision servers and set up data centers for growing e-business initiatives.

But as network managers look to squeeze more out of existing staff and servers, industry watchers say automated configuration management tools will become a must-have in large corporate networks.

"Right now IT staffing is inelastic. Staff cannot solve the server provisioning and management problem for the long term," says Ronni Colville, a research director with Gartner. "People don't scale in the distributed way that e-business servers scale. I don't see any way to staff up to adequately support the servers that support e-business."

While specifics vary among vendors, the software works with a "master" centralized server and software agents deployed on managed servers throughout the data center. The server software communicates with the agents, which capture configuration and performance data on each managed server. In some cases, the software includes scripts that can kick off automated actions to report configuration errors or even dynamically change the configuration based on the knowledge built into

the software. The master server can contain a data repository in which all user, application and server changes and actions are stored, or users can save the data elsewhere.

Software applications that perform specific automated tasks, such as deployment, comparison, notification and transport, also reside on the central server. And some vendors offer applications or software modules specific to third-party products, such as BEA Systems' WebLogic or IBM WebSphere application servers, that provide automation out of the box.

These software tools can be pricey, ranging in cost from Blade-Logic's \$25,000 entry price to Opsware's \$250,000 low-end implementation. But they promise to reduce staff hours by automating server provisioning and configuration — both labor-intensive tasks, especially as the number of servers in a network grows. The products also can provide security by scheduling and distributing software patches on a one-to-many basis, eliminating holes that human administrators potentially could miss.

#### In the country's best interest

This security aspect is what led the U.S. Department of Energy to implement Opsware's System 3 automation platform. The agency wanted to better secure technology assets and manage software licenses across its 130,000 users, says Karen Evans, the department's ClO, because it felt "an increased responsibility to protect essential national cyber assets."

In the past, the Energy Department manually provisioned servers, which didn't ensure the configuration would be the same across all resources and didn't create a central point of control. System 3 lets the department provision servers easily and maintain robust configuration control throughout the agency, and it gives Evans a handle on the software licenses across the department's multiple sites. Opsware's collection technology has helped "gain increased savings" by centrally administering the software licenses, Evans says.

Such also is the case at Royal & SunAlliance (R&SA) USA, a property and casualty insurance company in Charlotte, N.C. R&SA USA, winner of our 2002 User Excellence Award, tapped Novadigm's Radia software for automatic distributions, then discovered its usefulness in getting a handle on software licenses. In a money-saving project, the company is negotiating higher-volume agreements on duplicate software licenses that individ-

ual offices had bought, such as mapping software, says Roger Thibodeau, chief network executive at R&SA USA (see www.nwfusion.com, DocFinder: 3624).

Other benefits of server automation software are centralized control and volume distribution, which also serve network managers well when it comes to software application updates. Not only can these tools roll out application updates in volume, but they also quickly roll back to the previous version when an application configuration error threatens to take out one or more servers.

At Priceline, BladeLogic has tripled the speed of application rollbacks, Rose says. He notes that the company rolls out upwards of 300 application updates per month to its two cross-platform data centers. Some rollouts keep the company up to date on the latest technologies and others involve distributing patches, but until recently, application rollouts — and the rollback process when application errors threatened to cause downtime — required considerable manual work.

"Most people don't focus on the speed of rollback, but you realize it's important to cause a minimum impact on the Web site and customers," Rose says. "The greater the speed you can roll back a problematic app, the more likely your Web site and services will remain available."

While server configuration and change management software is not new, the automation and dynamic features included in

these tools are, says Corey
Ferengul, a program director with
the Meta Group. He says these
vendors are trying to eliminate
server and application failures
caused by human error and
improve the ratio of administrators to servers, which tends to
range, depending on network size,
from 1-to-30 to 1-to-100 or more.

Automated server configuration software would lessen the time needed for the administrator to touch all the servers with updates and maintenance. The software ideally also wouldn't include any errors. Users would input the configuration data correctly once and

be able to reuse and apply it to all servers.

- Ronni Colville, research director, Gartner

"RIGHT NOW IT STAFFING IS INELAS-

TIC. STAFF CANNOT SOLVE THE SERV-

PROBLEM FOR THE LONG TERM

**SERVERS SCALE.**"

PEOPLE DON'T SCALE IN THE DIS-

TRIBUTED WAY THAT E-BUSINESS

"The two processes that network management vendors did a terrible job of automating are configuration management and change management," Ferengul says. "About half of the issues that happen when a change is made are manual errors. Automation will save human operators from inputting errors."

While Ferengul says these tools meet a real customer demand, many vendors, because they are new, lack long lists of proven implementations — a must-have in today's IT buying environment. Another drawback is convincing network administrators to change their processes to support these automated tools.

The market for intelligent configuration management is young, Ferengul says, noting that Meta predicts that by 2006 corporate users will look to automate much of the management of their complex application and Web server environments. And some big vendors, such as HP with its Utility Data Center software and IBM with its autonomic computing initiative, are working toward providing an intelligent network of hardware and software that can provision itself dynamically — with the knowledge and understanding of the environment programmed into the tools (see related story, page 57).

Still, Ferengul says, most of today's vendors that do bits and pieces of automated change and configuration management might lead the way toward broader implementation of intelligent automation tools. Patch management for Windows platforms will be a driver, he says.

"Say you have three or four patches per month, taking three or four hours per patch, per server, on 120 servers with, say, four administrators — you do the math," Ferengul says. "There aren't enough hours in the week to apply patches. Numbers like that will get people looking into automating these IT tasks." ■

### continued from page 19

applications, with no regard to the physical boundaries of the devices.

#### How they work:

Take existing and new technology resources under their management once they are built and reallocate them in part or in whole across the infrastructure as required.

## Dynamic provisioning and administration

#### Vendors:

Novadigm,
Opsware (formerly Loudcloud) and
Think Control

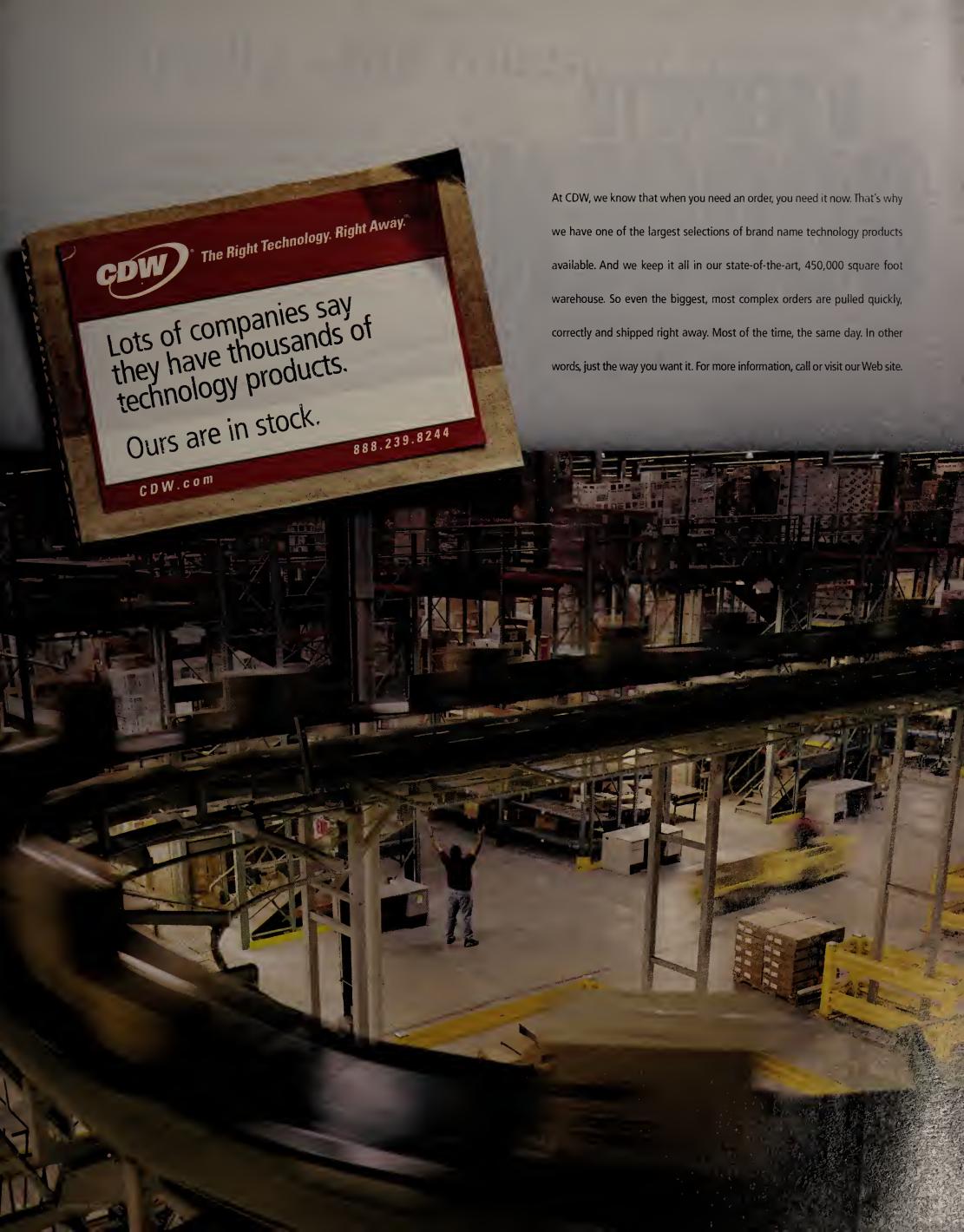
#### What they do:

Provide provisioning and maintenance, and then intelligence to automate tasks, such as allocation or removal of servers.

## How they work:

Interact with performance data to determine which application tiers require additional resources and then allocate infrastructure accordingly.

Source: Meta Group



# A SECURITY CONTINUE TO THE PROPERTY OF THE PR

By blocking the everyday barrage of network probes, intrusion-prevention tools are giving early users back the time to address their most serious security concerns.

BY JORNNE CUMMINGS

During the month of October, Chris da Silva, network manager at California State University in Hayward, spent 80% to 90% of his time combating network intrusions.

"My overall job here is maintaining the internal campus network, but most of my time then was spent dealing with security," he says. "And that included no-sleep nights."

The overtime was caused by of a flood of denial-of-service (DoS) attacks that occurred after da Silva and his staff thwarted some hackers trying to gain access to the network. Luckily for da Silva, late in the month the school began testing IntruVert Networks' IntruShield 2600, an intrusion-prevention appliance that not only detects intrusion attempts but also blocks them. He put the device inline, set it to reset the offending connections and saw the DoS attempts and resultant network congestion decreased by half. "The change was instantaneous. [IntruShield] shut down all those 'bots' the hackers had hammering on us," he says.

Now da Silva says he spends 50% less time chasing down incidents than he did before installing IntruShield.

#### The power of one

Intrusion prevention is a new breed of security tool that combines the powers of intrusion-detection systems (IDS), firewall, antivirus and vulnerability assessment wares. The idea is to reduce the false positives that hamper so many of today's IDS products and to take the next step: blocking intrusions in real time, before they hit the network.

Because the tools are new, they aren't perfect. Da Silva says false positives can be a problem. "In the default threshold mode for SYNs [where hosts open up connections to other hosts], IntruShield will trigger a false positive if you have a busy mail server with a ton of SYNs in a certain amount of time," he says.

But these tools also can learn the network norm over time, curtailing false positives as a result. "You can set IntruShield to constantly update the activity that's going on and reset its thresholds," da Silva says. "Then, only when it sees a sudden spike does it consider it an anomaly and block it. It's more intelligent than a traditional IDS."

Intrusion prevention also is more expensive. According to da Silva, a base IntruShield 2600 model, with real-time detection speed of 600M bit/sec, costs about \$34,000, and a 1G bit/sec 4000 model costs about \$100,000.

"Because it's an ASIC-based appliance, it costs more," he says. "IDSs we had cost under \$5,000 each, but they were just software you threw on a PC. They didn't have real-time blocking."

So far, even when running inline, the IntruVert appliance has not been a network bottleneck and has worked at wire speed, da Silva says. The tool averages 400M bit/sec throughput, which is more than enough to handle his Gigabit Ethernet network.

#### A tip to the technology

Mike Phillips, CIO and vice president of IT at Texas Tech University Health Sciences Center in Lubbock, also has good experiences to report on intrusion prevention. He's tested TippingPoint Technologies' UnityOne tool since August, and expects to roll out the product across the health-care organization in early 2003.

UnityOne combines IDS, antivirus and vulnerability assessment features, and can be placed inline to block intrusions in real time. "We've been inundating it with traffic off one particular subnet, and we've been impressed with UnityOne's performance and its ability to respond

quickly," Phillips says, indicating that the device runs at up to 2G bit/sec. "That's more than wire speed."

Its strong vulnerability assessment is important, too, given that the center registers 20,000 suspicious intrusion attempts per month. "It knows what we have running, so ...only alerts us and blocks things we're vulnerable to," Phillips says. "Our security staff can now deal with the important issues, probing things in depth, instead of chasing butterflies."

#### Time and manpower

Another intrusion-prevention tool is ForeScout Technologies' Active-Scout. Although this appliance blocks intrusions in real time, it does not rely on vulnerability assessment or attack signatures. Instead, ActiveScout blocks traffic based on a hacker's network scans before an actual attack. It replies to these scans with tagged false information that it will recognize and block should the hacker use the information to launch an attack.



MARTIN KLIMEK

Barry Choisser, network manager at Risk Management Solutions, an insurance risk modeling firm in Newark, Calif., had evaluated IDSs for two years before he discovered ActiveScout. "I really wanted something that didn't require updating signatures all the time. ActiveScout blocks everything, and I never have to fool with it," he says.

ActiveScout adds to the security architecture without adding headaches, he says, citing the example of a recent attempted worm infiltration. "We were getting 5,000 hits more than normal, but nothing got in. ActiveScout gives you an extra layer of protection that offloads the firewall. You don't throw away the firewall, the virus scanner or anything like that, but with this, you can offload a lot from them," he says.

The bottom lines, Choisser says, are time and manpower. "Because who has the time to configure these things and deal with pages? They are truly proactive."

Cummings is a freelance writer in North Andover, Mass. She can be reached at jocummings@attbi.com.

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## POWER

Slashed billing cycles, improved employee retention and effective recruiting are three reasons companies are turning to PDAs.

BY STEVE ULFELDER

Once considered a toy for corporate techno whizzes or gadget-happy managers, PDAs are, in increasing numbers, becoming a daily business tool for front-line workers. And analysts project wide-scale adoption over the next two years.

Of course, passing out PDAs is simple and relatively inexpensive. The challenges of corporate deployment come in data integration, synchronization and security, says Bill Clark, a Gartner analyst. Companies that are vigilant over business processes will be best-positioned to reap the benefits of PDAs because they already have robust back-end systems into which these devices easily fit, he adds.

The transportation and financial services industries have led the way on PDA implementations, but manufacturing and healthcare also have seen their share of forward-looking applications, says Scott Lundstrom, an analyst at AMR Research.

#### Healthier data

The North Shore-Long Island Jewish (LIJ) Health System in Great Neck, N.Y., is one example of a healthcare organization powering up with PDAs. About 300 physicians now use Palm PDAs to capture and track billing information as they make their rounds, rather than relying on the old method of writing out patient, procedure and diagnosis information on index cards. "The cards would filter in at the end of each day — if we were lucky," says Rick Carney, CIO at North Shore-LIJ, the nation's third largest, nonprofit secular healthcare system. About 20% of the records simply vanished, "and a lot of what we did get was unreadable, which led to data-entry problems and delays in billing."

In November 2001, North Shore-LIJ ditched the cards in favor of Palm Ills, which physicians pluck presynced from cradles as they enter the hospital. ChargeKeeper, an application from PatientKeeper, tracks patient visits, procedures and prescriptions. On the doctors' way out, they return the Palms to their cradles, and the data is uploaded to an Oracle database.

For an investment that Carney characterizes as "several hundred thousand dollars — well under a million," North Shore-LIJ claims a 490% return on investment. The company enjoys cleaner, more complete data, which means less manual data entry and fewer invoices "bounced" by the billing system, Carney says. "We're sending bills out faster, so we're being paid faster," he adds.

Another healthcare company — Visiting Nurses' Association (VNA) Home Health Systems, in Santa Ana, Calif. — began using PDAs as an employee retention tool. The company's nurses and clinicians are paid by the visit; to earn as much as their peers in hospitals, they must see about six patients per day, says CEO Jeneane Brian, who also is a developer who wrote one of the Palm applications.

In 2000,VNA Home Health had a severe retention problem: The turnover rate within nurses' first 90 days on the job was 27%. One reason was that the traveling nurses faced 48 minutes of paperwork per hour of care delivered. Hospital nurses' paperwork load was 30 minutes — 60% less than their traveling counterparts. VNA Home Health nurses were leaving the company because to make a reasonable salary they had to spend evenings and weekends doing paperwork.

In early 2001, the company distributed 250 Palm IIIs. Nurses sync their devices twice a day in the morning, they download patient information they need for the day; in the evening, they upload their records to a Microsoft Access database. VNA Home Health uses Pendragon Software's Forms 3.1 as the development platform for its homegrown applications



STEVEN VOTE

and Pendragon SyncServer 2.0 for data synchronization.

The new system is good for patients and nurses alike, Brian says. "In the old, paper-based system, latency of data was extraordinary. Clinicians were forced to make decisions on the fly [because they hadn't gotten the] sluggish paper data," she says. Now nurses have access to all the information they need from physicians, pharmacists, social workers and others.

With paperwork demands reduced up to 45% and hourly pay thus effectively increased, VNA Home Health's turnover rate within nurses' first 90 days has plunged to 4.5%, Brian says. In an employee satisfaction survey, the company asked if the presence of a PDA-based system would influence nurses' future decisions to work for an agency; 99.9% said "yes."

#### An electronic recruiter

Indeed, PDAs can be effective recruiting tools. The University of South Dakota, one of *Network World's* 2002 User Excellence Award Honorable Mentions, can attest to that (www.nwfusion.com, DocFinder: 3623). A few years ago, the university noticed the colleges with which it competed were touting laptop programs, which it deemed too pricey, says Roberta Ambur, ClO at the school, in Vermillion. "We knew PDAs would be cheaper, and we liked the additional mobility they offered," she says.

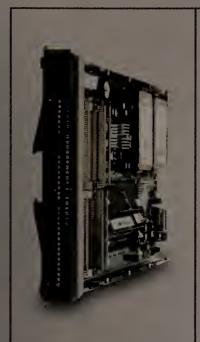
The school launched a first-of-its-kind program, requiring freshmen to use Palm PDAs to register for classes, e-mail questions to professors, take notes, schedule appointments with advisers and the like. Students and faculty use XTNDConnect Server from Extended Systems to synchronize and send data to each other and to their PCs.

Now in its second year, with 2,700 devices in use, the program is an incontrovertible success. Professors have begun to optimize lectures and tests around the Palms' capabilities and, more importantly, freshman enrollment has risen. Anecdotal evidence shows the PDAs are a factor in the higher enrollment. Indeed as the PDA sheds its gadget image, it is becoming a factor in corporate competitiveness, too.

Ulfelder is a freelance writer in Southborough, Mass. He can be reached at sulfelder@yahoo.com.







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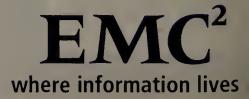




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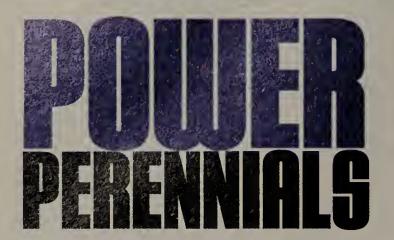
POWER PEOPLE



Power requires balance. The 50 people we've selected as this year's most powerful network players sometimes make it look easy, but deciding when to take risks and when to play it safe is a true art.

Our list covers representatives from the vendor community — both perennials and up-and-comers — users, the government

sector, those who make standards come to fruition, and thought leaders. No two people's jobs are exactly alike. Neither are their hobbies. One power player relaxes at the gold mine he bought in California. Another is restoring a classic Corvette. A third escapes to his Montana ranch when it's time to put work aside. Once again, it's all about balance.



Chambers. Ballmer. McNealy. These names are as much a part of the network industry as the routers and switches moving the bits and bytes around the world. By virtue of the organizations they lead and the pervasiveness of the technologies over which they lord, they have become perennial figures on our power list.

#### **JOHN CHAMBERS** President and CEO, Cisco



John Chambers is the only vendor executive to be ranked among Network World's most powerful since the Power Issue's inception in

1994. Back then, when he was vice president and president-elect, he earned his spot for his acquisition prowess, a skill he has demonstrated artfully throughout his stewardship of Cisco. In 2002, Chambers oversaw the acquisition of five more start-ups. Chambers' charisma

continues to wow customers and bodes well for his visions of Cisco in new markets, such as storage and security (see Cisco profile, page 10).

#### TIM BERNERS-LEE Director, World Wide Web Consortium



Next to icon Chambers, Berners-Lee is the only other person whose name has consistently graced the power list since 1994. His

influence persists through his work with W3C — an organization that has grown in stature annually — and for his position as senior research scientist at the MIT Laboratory for Computer Science. He even continues to pile on the accolades as inventor of the World Wide Web: This year, Berners-Lee, a Brit, received the Albert Award from the acclaimed British Royal Society of Arts for his work with the Web.

#### **SCOTT MCNEALY**

Chairman, president and CEO, Sun

Sun was weaker in 2002 than it has been in a long time, but it has a history of rebuilding itself out of the sheer chutzpah of its leader, Scott McNealy. This stalwart retains his place among the industry's most powerful, a position



he has enjoyed since 1995. Admittedly, McNealy faces bigger problems than ever before, with Sun's beleaguered stock

price, fiscal losses, layoffs, mass executive exodus and market-share erosion to less-expensive Intel/Linux servers. Even so, the high-end server market is still Sun's to lose. And reasons abound to believe McNealy will shake Sun out of its troubles. Right now, he is duking it out with Microsoft for Web services, pushing into storage and helping shape future, intelligent infrastructures.

#### **LARRY ELLISON** Chairman and CEO, Oracle



The flamboyant founder of Oracle lost none of his panache this year, even though his company has been taken down a few pegs. In

November, he delivered his remarks to the OracleWorld conference from Auckland, New Zealand, where he was competing in the Louis Vuitton Cup sailboat racing series as a member of the Oracle BMW Racing team. Granted, his splashy lifestyle belies his company's problems. Once the undisputed leader of

the database market, Oracle in 2002 lost chunks of that business to IBM on the high end and Microsoft on the low, researchers report. But Ellison will battle back with a loyal user base, plenty of business sinarts and a cache of industry power, accumulated since his first appearance on this list in 1996.

#### **ED WHITACRE**

Chairman and CEO. SBC Communications

On the most powerful list since 1997, this tough-as-nails Texan has a nose for oppor-



tunity and the wherewithal to command what opportunity he finds. The series of acquisitions he led from 1998 through 2001 has set up

SBC well for its role today — that of an up-and-coming national carrier. This month, SBC standardized pricing of data services nationwide. SBC also continues to deploy its national, OC-192 backbone, due for completion by mid-2003. As for long-distance, SBC already services five of its 13 local states, and Whitacre has been pushing hard to gain approval next for the lucrative \$10 billion California market.

#### **STEVE BALLMER** CEO, Microsoft



As the official leader of Microsoft, and one of its two strongest personalities, Ballmer has indisputable power - even if he's only been

named among the industry's most powerful since 2000. As his legendary story goes: He dropped out of Stanford University's business school in 1980 to join Bill Gates in his then-30-employee start-up. Ballmer now oversees 50,000 employees in more than 70 countries at

> Microsoft, which, no doubt, today's Stanford business students study.While Microsoft's antitrust troubles have amounted to a slap on the wrist, Ballmer wants people to know he's taking the reprimand seriously. In November, he admitted that Microsoft does have responsibili

ty for affecting other industries and he's been proudly pointing out that Microsoft moved quickly to establish the board-level antitrust compliance committee that the case's settlement required.

#### **MICHAEL DELL** Chairman and CEO, Dell



Dell came to the most powerful list in 1998, credited then for his brazen success story and his entry into the server market. Since

then, he has led his company to command server and PC sales. Within his choice of capable Kim Goodman (see profile, page 48), Dell also has seen his company quickly become a considerable contender in network gear. Next up, Dell hopes, is dominance in switching — and storage, PDAs and printers, among other hardware goodies (see Dell profile, page 10).

#### **IVAN SEIDENBERG** CEO, Verizon



In March, Seidenberg assumed the title of CEO, leaving his former co-CEO, Charles Lee, to the company's chairmanship.

As Verizon's sole chief, Seidenberg boosts his already considerable power, first noted on this list in 1999 as Bell Atlantic head. Going forward, Seidenberg will continue to elevate the carrier from its regional foundation to the truly national status he wants. With a flurry of approvals in the fall to offer long-distance in the northeast, Verizon has gotten clearance for long-distance services in all of its 15 local service areas except three — Maryland, West Virginia and Washington, D.C. Seidenberg is counting on adding those to the company's roster in 2003 (see Verizon profile, page 14).



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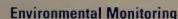


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Manager of Energy
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# POWER PEOPLE

for the open source operating system Big Blue is pouring \$1 billion into making one of its core technologies (see full profile, page 46).

# **KIM GOODMAN**

Vice president and general manager, Dell Networking



Ask analysts about the impact Dell is making in the switch market, and they"ll tell you "a respectable dent." Goodman, as head of Dell Net-

working, is the one swinging the hammer. She is quite successfully building up the company's switch business — driven to succeed for herself, her mentor Michael Dell and the African-American community at large (see full profile, page 48).

# **EVAN KAPLAN**President and CEO, Aventail



Aventail, the company that Kaplan founded with CTO Chris Hopen, is turning heads with its Secure Sockets Layer-based VPN appliances.

While rival Check Point Software might hold the lion's share of VPN licenses currently, the no-client technology that SSL offers is growing in appeal as companies desperately seek out low-cost ways to offer secure access to remote employees (see related story, page 62). By 2005, sales of SSL VPN products will reach \$840 million, Infonetics Research predicts. With more than 400 companies counted as customers, according to the company, Kaplan's power lies in an immense opportunity.

# **SANJAY KUMAR**

Chairman and CEO, Computer Associates



Say what you want about CA, it's still a \$4 billion software mammoth, with a loyal following for products such as Unicenter. With

the November retirement of founder Charles Wang. Kumar has assumed the whole leadership caboodle. While he's now in the unenviable position of battling dual government investigations — one by the U.S. Securities and Exchange Commission and the other by the U.S. Department of Justice — he has successfully warded off enemies before. This year he fended off for the second time, an ousier move by a disgruntled share-

holder. And he has countered future criticism by refreshing his board with new members. A good move, from the early signs; the revitalized board recently instituted new comprehensive corporate governance procedures, to the applause of users and investors.

# **MARIO MAZZOLA**

Senior vice president and chief development officer, Cisco



In May, Mazzola tweaked the organizational chart that put him on top of the 11 major technology groups formed from Cisco's major

2001 reorganization (that had skyrocketed his power within and outside the company). In this latest move, he lumped all routing with access technologies into one group, and placed the switching gang in a crowd with voice and storage technology, whittling the 11 technology silos to eight. His hope is to team "experience" with "emerging" to make good on Cisco's promise to better integrate acquired technologies into shippable products. Mazzola, a native of Italy who has led Cisco's LAN switching and product engineering efforts for a decade, gets his power from a long history of making good on promises.

# **BILL MCDERMOTT** CEO and president, SAP America



SAP wanted a market insider with strong selling skills to invigorate sales of its CRM software to U.S. corporations, and the German software

maker found that person in McDermott. This fall, McDermott abandoned CRM market leader Siebel for relative CRM underdog SAP.At Siebel, McDermott headed worldwide sales operations. At SAP,McDermott is leading all business activities in the U.S. and Canada. In years past, dozens of SAP executives took the opposite flight to join Siebel — which makes McDermott's move even sweeter for SAP, which slowly is becoming a familiar blip on Siebel's CRM radar. SAP also is hoping McDermott will bring some stability to his post, which has been a bit of a revolving door at SAP McDermott is the fourth person to fill the U.S. CEO role in three years

# PHILLIP MERRICK

Chairman and CEC WebMethods



Respondents to Morgan Stanley's ongoing CIO Survey series regularly name application integration among their top three IT

spending priorities. That's good news for the integration software company Merrick founded in 1996 with his wife. While WebMethods is weathering the technology slowdown better than some of its competitors are, the company could use a revenue boost. In the quarter ended Sept. 30, WebMethods managed to increase license revenue 13% over yearago figures, but fell short of returning to profitability and posted a net loss of \$4.9 million. These days Merrick is championing his company's "Enterprise Dialtone" theme, which describes a simplified integration network that hides its underlying complexity from users — much like the phone system does for phone callers, who have learned to take a dial tone for granted. WebMethods has created a platform with a simple architecture that lets users easily plug in applications and business processes, Merrick says.

# STEVE MILLS

Senior vice president and group executive, IBM



Having helped execute a multiyear makeover of IBM's software group, Mills today heads the \$13 billion businesssoftware division, which con-

tributed 14% to 2001 revenue. Under his jurisdiction are the WebSphere application servers, development tools, portals and integration software; DB2 data management resources; Tivoli systems management software; and Lotus messaging and collaboration technology. Today, Mills and his team are working to capitalize on new market opportunities and development efficiencies. This fall, the software group took aim at midsize businesses with the unveiling of less-expensive, scaled-down versions of its application server, database, portal and integration software. By shifting development practices to take advantage of reusable, modular components shareable across IBM software lines, product teams can reduce the time required to develop new products by 80%, Mills says

# SAM PALMISANO

President, CEO and chairman-elect, IBM

Well-groomed and widely respected. Palmisano ascended in March to the helm of IBM — a setting that's more than familiar to the company lifer who a some point during his 29-year tenure has



run nearly all of Big Blue's businesses. He started his command quietly, then rocked the boat in July with news that IBM would

acquire the consulting arm of auditing giant PricewaterhouseCoopers for \$3.5 billion. In October, Palmisano publicly shared the full course he's charted for IBM and its customers. His vision centers around better systems integration, open standards and "on-demand" computing resources, which can be doled out as handily as electricity, so companies can become more responsive, flexible and resilient to market shifts. At the core of this new wave of e-business will be autonomic systems than can monitor, protect and heal themselves, says Palmisano, who will assume the role of IBM chairman on Jan. 1.

# **GREG REYES**

Chairman and CEO, Brocade Communications Systems



Can Reyes' charisma, work ethic and business acumen keep storage switch vendor Brocade on top? In recent months, Reyes has had to

deal with 160 staff cuts and key executive departures — including its president, CTO, vice president of global services and vice president of marketing. Plus, the company is experiencing heavy competition from familiar rival McData and newcomer Cisco, which jumped into the Fibre Channel storage switch market with its August acquisition of Andiamo Systems. On the flip side, Reyes orchestrated Brocade's first-ever acquisition in grabbing start-up Rhapsody Networks, which makes multiprotocol switching technology, in November. And in October, Brocade countered McData's midrange move by introducing a 32-port switch for customers who need more than the entrylevel eight ports but fewer than 128 ports. Still to come from Reyes and Brocade are rumored 256-port storage switches.

# LINDA SANFORD

Senior vice president, enterprise on demand transformation, IBM



One of the highest-ranking women at IBM Sanford joined the company in 1975 as an engineer in the type-writer division. Her first high-

profile accomplishment was transform-



ing IBM's S/390 mainframe systems from traditional monoliths to enterprise servers capable of handling modern ebusiness applications. Later she led IBM's up-and-coming storage-systems division and its developing Shark enterprise storage line. Sanford's new challenge is deploying utility computing internally. CEO Sam Palmisano has gone public with his vision of utility-based, ondemand computing resources. To show its commitment to that vision, IBM is adopting the model itself — and beginning with the new year, Sanford will oversee companywide adoption of ondemand initiatives.

# **GIL SHWED**

Chairman and CEO, Check Point Software Technologies



Shwed is founder and ruler of the company that dominates the all-important security firewall and VPN markets. As such, his power

has grown as the security industry has matured. Check Point owns 65% of the worldwide enterprise VPN/firewall software market, according to IDC, and Shwed is the mastermind behind its success. He holds a patent for the stateful inspection technologies on which Check Point created its firewalls. An Israeli, he has a history of leading security projects for the Israeli Defense Forces and others,

and appeared on the Forbes' 2002 list of billionaires under the age of 35.

# **TOM SIEBEL**Chairman and CEO, Siebel Systems



This Montana ranch owner is all business in his office. He's demanding, competitive and operationally conservative, with a reputation for run-

ning a tight ship. Now is no time for him to loosen control. The company he built faces mounting competition from enterprise software heavyweights such as Oracle and SAP that want a piece of the CRM market Siebel pioneered. There's also Microsoft, a longtime Siebel partner, which is readying a CRM product of its own. Not to mention the string of bad publicity this fall following a Nucleus Research report that says 61% of 23 Siebel reference customers surveyed do not believe they have achieved a positive return on their CRM investment. Nonetheless, Siebel still owns the lion's share of the CRM market and continues to upgrade its suite with broader platform support and new tools for automating business processes and tackling application integration.

# JOHN THOMPSON

CEO, Symantec

Observers say the discipline learned in



his 28 years at IBM has served him well in revitalizing Symantec, a consumeroriented company that was foundering when he took on the

CEO role in April 1999. Today, Symantec is an enterprise player — and a big one at that — and Thompson is well on his way to meeting his goal of obtaining 70% of revenue from corporate customers (see full profile, page 52).

# **VICTOR TSAO**President and CEO, Linksys Group



Privately held Linksys came to life in Tsao's garage — he founded the company in 1988 with his wife. From a humble start, the com-

pany today commands a dominant share of the market for wireless, broadband and network hardware for home offices and small to midsize businesses. Part of the Linksys' appeal is that the company knows its customers: Pricing, services and support are geared for small businesses and home users who don't have big budgets or the expertise to troubleshoot complex network problems. Plus Linksys offers both modular and all-in-one products —

such as a router with a four-port switch and an access point — that let users get all the hardware they need in one box or buy piecemeal. Exposure also helps: Tsao has secured space for Linksys products on the shelves of major retailers including Best Buy, Circuit City, CompUSA, Office Depot, Office Max, RadioShack and Wal-Mart. All this adds up to stellar revenue growth of 981% between 1997, when Linksys took in \$32 million, and 2001, when the company snared \$347 million.

# JOE TUCCI President and CEO, EMC



Despite financial problems, workforce reductions and loss of market share, EMC remains aggressive — it's a force not to be underestimated.

For one, Tucci created a separate software division to focus on heterogeneous storage management. For the past year, Tucci has worked to grow EMC's software and services revenue to help compensate for shrinking hardware margins. The goal is to reach a healthier distribution of revenue, with 50% coming from hardware, 30% from software and 20% from services. Tucci also continues to ramp up EMC's midrange Fibre Channel storage lineup, relying on partner Dell for manufacturing. He also managed to increase EMC's R&D budget from 8% of revenue to 13%, Gartner reports.

# POWER USERS

Other IT executives might be paralyzed by the poor economy and its effect on their budgets. Not these power users. They continue to improve IT operations and find new ways to help their businesses perform in an unfriendly climate. Among their ongoing IT initiatives are plans to roll out wireless devices, introduce real-time video Webcasts, tackle grid computing and invest in disaster-recovery technology.

### LINDA DILLMAN

Senior vice president and CIO, Information Systems Division, Wal-Mart Stores



When Wal-Mart makes an IT decision, its suppliers take notice, because often the effects of Wal-Mart's technology savvy will trickle

down to them. The most recent example is Wal-Mart's announcement that it is

rolling out a new electronic data interchange system to let its thousands of suppliers swap EDI transactions with Wal-Mart using the Internet rather than proprietary value-added networks (VAN). The person at the top of the chain is Dillman, who oversees Wal-Mart's entire IT operations. She joined Wal-Mart in 1991 and helped develop the company's legendary data ware-house and supply-chain management systems. By shifting from VANs to Internet EDI, Wal-Mart stands to save millions in VAN fees, analysts estimate.

# **MARK FORMAN**

Associate director for IT and e-government, U.S. Office of Management and Budget

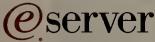


Forman has an enviable amount of IT money to allot — along with plenty of IT projects to monitor. He oversees federal IT spending, which

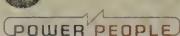
exceeded \$48 billion in 2002 and will top \$52 billion in 2003. One of his biggest chal-

lenges is keeping track of the projects agencies are working on, to reduce duplication and consolidate hundreds of overlapping IT projects in the federal government. As part of his job, Forman directs the activities of the federal ClO Council. He has created a framework to manage the modernization of government systems, and his team grades the progress of each agency quarterly. Security is a key concern. Many existing systems require security upgrades, and Forman has had to withhold some IT funding to encourage agencies to fix security vulnerabilities in their old systems before tackling new rollouts.









# DON HAILE

CIO, Fidelity Investments Systems Company



Fidelity Investments is the largest mutual fund company in the U.S., with an IT division that employs 2,500 people and spends \$2

billion annually — all under Haile's watchful eye (see full profile, page 50).

# **SANGTAE KIM**

Vice president and information officer, Lilly Research Laboratories

The adage "time is money" is particularly relevant to the pharmaceutical industry, where product development delays can mean millions in lost revenue. At Lilly Research Laboratories, a division of pharmaceutical manufacturer Eli Lilly and Company, Kim is among



the pioneers of computational drug discovery. He oversees departments responsible for the application of information technology in

pharmaceutical research and development — including technologies that drive discovery research, preclinical development, clinical research and regulatory affairs. He's also an early power player in the world of grid computing, whereby surplus computing power and spare IT resources are harnessed to tackle a single complex application.

# **JOHN STENBIT**

Assistant secretary of defense for command, control, communications and intelligence; CIO, Department of Defense



Stenbit publicly states that his goal is making information available on a network that people can trust. His challenges include populat-

ing Defense Department networks with new, dynamic sources of information to defeat the enemy and denying the enemy such information advantages. As CIO, Stenbit needs to think of his users, who require a secure, robust network with fresh information and collaborative capabilities. As an assistant secretary of defense, he needs to think tactically, coming up with new ways to access information from U.S. adversaries. Toward these ends, Stenbit is involved in multiple IT projects, including a massive \$400 million effort to revamp the Pentagon's IT infrastructure.

# **WINN STEPHENSON**

Senior vice president of IT development, FedEx Services



With an IT budget of \$1.5 billion and staff of 5,000, FedEx Services supports the air and ground divisions of FedEx.
Stephenson's

domains are the company's network infrastructure and field service devices and scanning systems. Most recently, his team worked with Motorola to develop the FedEx PowerPad, a Microsoft Windows-powered Pocket PC designed for 40,000 of the company's couriers. The devices will be deployed early in 2003 to replace units that don't immediately upload package information to the FedEx network. With the FedEx PowerPad, as soon as a package is scanned and signed for, the device sends the data and signature capture to the corporate network.

# STANDARDS PAULER

Standards are becoming more important than ever as companies seek to open their systems to their business partners' and customers' networks. We applaud those working behind the scenes to make sure everyone

# HARALD ALVESTRAND

Chair, Internet Engineering Task Force



The soft-spoken, contemplative IETF leader understands how strategic his role is. Rather than focusing with unwavering attention on

Internet technology alone, he envisions the business and social changes spurred by the Internet. Such changes are built on the technologies that the IETF and other standards groups help create. An active and articulate speaker, Alvestrand strongly advocates cooperation among standards organizations.

# MICHAEL BARRETT

President, Liberty Alliance

The striking thing about the Liberty Alliance is that it is knee-deep in enduser involvement — a rarity among standards organizations. Barrett, who is also vice president of Internet strategy for American Express, took over as president in September. Under Barrett's reign, the



Alliance — now nearly 100 members strong — continued to gain serious ground in 2002 in its goal to establish standards for the

plays by the same rules.

emerging area of identity management. Just four months after releasing its 1.0 specification, it had a 1.1 draft available for public review.

# **LESLIE DAIGLE**

Chair, Internet Architecture Board



The IAB is the IETF's premier committee, overseeing personnel placements, acting as an advisory council to various IETF participants,

guiding development of protocols and being a watchdog for the process by which a proposal becomes a standard, among other duties. Daigle, who also serves as director of directory research for VeriSign, assumed this job in March. Formerly, she was IAB executive director, and has worked on standards for technologies such as uniform resource identifiers.

# CHRIS KALER AND KELVIN LAWRENCE

Co-chairs, Web services security tech committee, OASIS



Web services are shaping up to be the future of the Internet if the standardssetting powers can secure them. Enter Kaler and

Lawrence — the former is architect, Web services and security at Microsoft and the latter an IBM distinguished engineer and CTO of the company's dynamic ebusiness technology. Kaler played an instrumental role in creating WS-Security, the Web Services security protocol spearheaded by IBM, Microsoft and VeriSign and released in April. It was turned over to this Organization for the

Advancement of Structured Information Standards (OASIS) committee for refinement. As of November, these two, with engineers from VeriSign and Sun, developed the fourth draft of WS-Security.

# **ALAN PALLER**

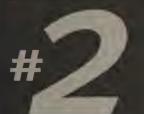
Director of research, SANS Institute



With security threats rising at an alarming rate, Paller's power is growing quickly. The institute says that 12,500 security professionals received training

in 2001 under its auspices. Paller, who founded the institute, is responsible for research that has changed the way the industry secures network operating systems and hardware. The institute, which counts 150,000 people as members, is also a founding participant in a multiagency effort to create minimum security-standards benchmarks for use by the industry at large. A frequent public speaker and media regular, Paller talks, and network executives listen.

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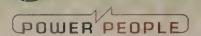
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# RICHARD CLARKE

Special advisor to the president for cyberspace security



In the aftermath of the 2001 terrorist attacks, government security specialist Clarke became special adviser to Pres-

ident Bush. In this role, he advises Bush on all matters related to cybersecurity and chairs a governmentwide board tasked with coordinating the protection of critical infrastructure systems. So far his team's efforts can be seen in a draft publication of national strategy for protecting America's infrastructure, released for comment in September.

## **ARTHUR GONZALEZ**

Judge, U.S. Bankruptcy Court, Southern District of New York

Assigned to shepherd the record-breaking WorldCom case through its Chapter



11 proceeding, Gonzalez has had to make some tough decisions so far, including approval of a \$25 million budget

for paying key employees sizable bonuses to stay with the company as it tries to emerge from bankruptcy. Gonzalez bases his decisions on what can best enhance the value of the company, he told critics who questioned the distribution of bonuses. Other Gonzalez rulings in this history-making bankruptcy are the approval of up to \$2 billion in interim financing to keep WorldCom operating as it reorganizes its finances; the decision to grant WorldCom permission to get out of contracts for 30 of its 49 unused fiber-optic links; and the appointment of an independent investigator.

# **MICHAEL POWELL**

Chairman, Federal Communications Commission The ball's in Powell's court, but the kind



of play he will make is relatively uncertain — even after two years as chairman of the agency that controls interstate

and international telecommunications. With Powell's reputation for a hands-off approach to regulation, industry watchers expected the FCC chief to loosen restraints on regional Bells so they could launch consumer broadband services more easily. But the top U.S. communications regulator has been slow to act, perhaps out of fear of further wounding incumbents such as WorldCom, critics say. Powell still has the power to fuel modernization of the public network — if he decides to use it.

## **ELIOT SPITZER**

Attorney general, state of New York

This sheriff of Wall Street has demonstrated serious zeal in uncovering conflicts of interest among financial ser-



vices firms that potentially hurt investors. He's been digging into Citigroup's Salomon Smith Barney investment banking

unit and in particular the work of Salomon telecom analyst Jack Grubman, who is suspected of recommending stocks to help win banking business. Spitzer's dogged efforts have garnered international attention and led many companies to overhaul their investment bank research practices. And, of course, fiscal repercussions have followed. One Spitzer inquiry led to a \$100 million fine for Merrill Lynch. This year, Spitzer filed suit against Network Associates, seeking to end software license prohibitions against conducting product reviews or tests without the company's permission. The Democratic attorney general handily gained reelection in November. Industry watchers don't expect this political up-and-comer to stop there.

# PAULER THINKERS

How should a company prioritize its IT spending? Is the market ready for this product? When is the economy going to improve? The power thinkers we've selected might not always have the answers people want to hear, but their guidance and wisdom have helped vendors and users alike weather the persistent downturn.

# **JUDITH DONATH**

Director, Sociable Media Group, MIT Media Lab



Donath has the unusual job of investigating personal identity in the networked world. Her studies of how cyberspace shapes social

interactions are growing in importance now that telework is an accepted practice, and office workers communicate as much with e-mail and instant messaging as in they do in person. The Sociable Media Group she leads is concocting models that eventually will help network executives build infrastructures that best support users.

# **JOHN HAGEL**

Business strategist



With his third book, Out of the Box: Strategies for Achieving Profits Today & Growth Tomorrow Through Web Services, this

popular business writer continues to offer tidbits on how to marry IT with business needs. A former McKinsey & Co. consultant who went out on his own last year, Hagel is a speaker-circuit

favorite. His experience encompasses everything from creating a start-up that was successfully sold off for a mint (Sequoia Group, sold to MetPath in 1982) to helping with the recent launch of Web services providers, such as Grand Central, one of our 10 start-ups to watch for 2002 (www.nwfusion.com, DocFinder: 3628) and whose CEO is on this most powerful list for his Web services service vision.

# ANNE THOMAS MANES Founder and CEO, Bowlight

An expert on Web services standards and security issues, Manes recently decided it was time to go it alone. She



just launched Bowlight, a consulting firm with a mission of helping software start-ups refine their technical and business

strategies, and helping business users sort through Web services trends. Most recently she was CTO at Web services infrastructure company Systinet. Before that, Manes pioneered Sun's Web services strategy. Her track record includes work with the W3C, OASIS and the Web Services Interoperability Organization, not to mention actual track records she earned through her PRO Rally highspeed auto racing hobby.

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# ATTHE FIFTH OF A NEW ATET

Unile competitions are weak, **FIRST Precidents Belosy Beinard** plans to move swiftly to capture business service market share, crucial to the carrier's long-term health.

AS DENISE PAPPALRADO

The decision Betsy Bernard made six years ago to leave her 18-year career with AT&T to head Pacific Telesis' Business Market Group under then-CEO David Dorman is one she likely won't ever regret. Ultimately, that move landed her where she is today, newly named AT&T president — and makes her one of the 50 most powerful women in business, according to *Fortune* magazine. (Despite this recognition, Bernard downplays her role as a female executive.)

While Bernard's and Dorman's paths diverged after SBC Communications bought Pacific Tel and they both ultimately left the company they met up again two years ago. Again, Dorman came knocking, this time as AT&T president wooing Bernard to return to her corporate roots as head of the carrier's consumer business. In a sign of her allegiance, she gave up her position as executive vice president, national mass markets, at Qwest to join Dorman at AT&T. She had been at US West for two years as executive vice president of retail operations, before the company merged with Qwest.

# From Albany to NYC

Bernard returned to AT&T a respected executive, 25 years after she joined AT&T Longline in Albany, N.Y., as an intern from St. Lawrence University Now, two years since Bernard's return, AT&T's heart and soul, the business group, is in her hands.

AT&T is betting its future on this group, with its 4 million business customers and \$28 billion in revenue last year. The company needs to drive demand and increase market share within its managed services, IP and even traditional data service groups to compensate for shrinking margins in the residential voice market. The expectations don't faze her.

"The great thing about me taking over is there's no change in strategy, vision or priority. That's a great testament to a very thoughtful restructuring ... [and to] Dorman, the last person to head up AT&T Business," Bernard says.

Bernard will make a formidable competitor in the business services market. "The priorities are, first and foremost, to take advantage of the unique market we find ourselves in," she says. "With our competitors focus-

ing on testifying and dealing with creditors, we are focused very much on ... gaining market share and taking business away from our competitors."

As AT&T president, Bernard calls the shots for about 55,000 employees who work for AT&T Business and AT&T Labs, the company's network services group and international ventures. They'll need to be on the ball, because Bernard is known as a hard worker who puts in long hours and runs a tight ship in terms of punctuality, staying the course and leading by example.

"Betsy is immensely focused, intense and high energy," says Kevin Crull, senior

vice president at AT&T Consumer.She is very hands-on, in a good way, he adds.

"She wants to know what your plan is, how you're measuring performance, how you will know how well your plan is doing, what your contingency plans are and when those contingency plans will go into place.

She makes you think three or four moves ahead—that's how hands-on she is. She doesn't try to run your business, but forces you to think about everything," says Crull, who worked with Bernard at US West and jumped to AT&T at her request.

If she compliments your work, you know she's being genuine, he says. "She's not big into rah-rah; she's not about a lot of hype."

# The mark of a great leader

Bernard describes her management style as "pretty simple." She follows this philosophy: First a leader defines the vision, describes how the company gets there and then describes the employees' roles in that journey.

"The power of 55,000 employees ...all heading in the same direction and knowing why they are heading there and what they are trying to accomplish, that's what creates 'executional' success. That's what great leadership is all about," Bernard says.

John Kelly, McData CEO, recounts Bernard's role during a succession-planning panel they participated in while peers at US

participated in while peers at US
West. "Without fail, Betsy would
have in-depth knowledge and understanding of candidates as human
beings and their leadership as well as
their performance," Kelly says, adding
that she took time to get to know people,
and this knowledge "made the likelihood of
those people getting a promotion better."

 Business-focused though she might be, Bernard enjoys jogging and downhill skiing — she even used to ski competitively, she says. If she had more time away from work, Bernard says she would travel for fun, play more sports and volunteer for child welfare.

Former co-workers describe Bernard as someone who likes to have a beer and go to hockey games, and who has a competitive streak.

Bernard's focus on the prize — now growth and revenue in AT&T Business — likely will provide crucial success for AT&T. And this longtime telecom professional will get there with integrity and the power of her employees behind her.

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# As director of IBM's Linux Technology Center. Chaniel Frue is the driving force behind IBM's considerable open source efforts.

BU TELL TOTEMUTH

When Daniel Frye joined IBM's supercomputer group in the early 1990s, the Linux operating system was barely a glint in the eye of Linus Torvalds, its creator. A decade later, Linux is now as much a part of IBM's product arsenal as the ThinkPad and the mainframe, and Frye is the Linux guy. As director of IBM's Linux Technology Center, he oversees Big Blue's technology strategy for the open source operating system.

Advocating use of open source software wasn't a natural for Frye. Upon first learning of Linux at a conference in 1997, Frye admits being a little dismissive about the operating system. At the conference, a research team created a concept for a next-generation supercomputer based on a cluster of low-cost, Intel-based machines that would run Linux, recounts Frye, who at the time was with an IBM group responsible for identifying computing trends. Frye was intrigued by the supercomputer concept, but didn't get the team's insistence that Linux would be the operating system.

"My first reaction was, an open source thing? C'mon, what's that all about?" he says.

# An analytical thinker

But his natural curiosity as a scientist made him want to know more. Frye was educated as a physicist, receiving a master's degree in physics in 1982 and a doctorate in theoretical atomic physics in 1985, both from Johns Hopkins University. "I don't use my atomic physics background every day," he says, but notes that the critical and analytical thinking skills he's acquired are important in predicting trends in computing technology.

Drawing on his skills as a researcher, Frye educated himself on Linux by working with customers, academics and other technologists. Ultimately, he cowrote a strategy white paper outlining Linux's benefits. The white paper set the tone for IBM's position on open source in general and Linux in particular.

Soon after the white paper came out in 2000, IBM invested \$1 billion to make Linux one of its core technologies. Since then, IBM has ported its entire line of servers — from mainframes to midsize and Intel-based machines as well as laptops, workstations and PCs — to Linux. And it has released Linux ports of its major enterprise software products, such as WebSphere, DB2

database and Lotus Notes/Domino While the company does not release Linux revenue statistics, IBM says it has more than recovered the costs of moving its hardware and software products to Linux

As IBM's foremost proponent of Linux, Frye was the company's only choice to head the Linux Technology Center, which was established formally in 1999.

# A good open source citizen

Frye, it seems, was destined for IBM. "I did most of my

graduate work on some of the most powerful supercomputers in the world, including IBM machines, Frye says.

When it came to think about employment, Frye says he found IBM, with its stable of supercomputing engineers, a good fit. He came onboard to lead the RS/6000 SP team, bringing to bear his experience as a high-end user and helping to take IBM's scalable Unix business from zero revenue to more than \$1 billion in sales by 1998.

But directing the open source efforts of an industry dinosaur takes special care, Frye says. One of his earliest challenges was getting the open source community to

accept IBM as a partner when the company began increasing its Linux efforts. It feared IBM would come in and change the way the open source community worked, and was worned IBM had a secret agenda, he says.

ried IBM had a secret agenda, he says.

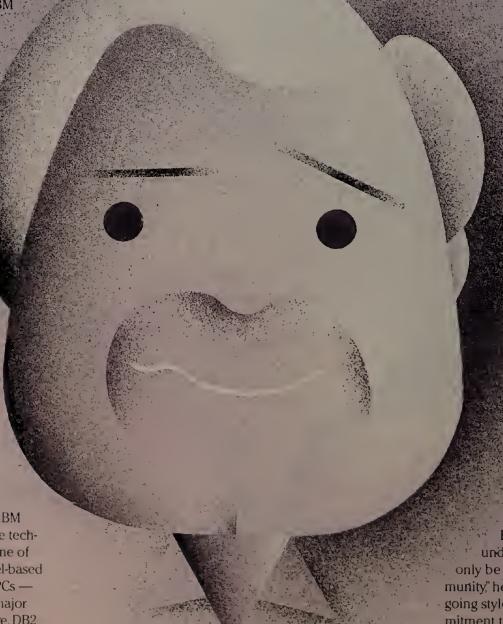
At first, Frye had developers observe, open source community activity quietly. He gave them the go-ahead to jump in and participate active-

to jump in and participate actively, in the process of open source development, which includes lively debate and taking controversial positions on how code should be written, once IBM had established credibility among the various groups that maintain Apache, Linux, Samba and other open

source software.

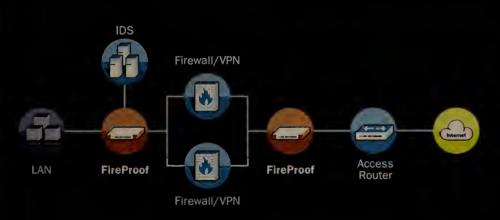
Frye favors the hands-off management style needed for a job tied to the anticorporate leanings of the open source software movement (several hundred open source programmers work at the Linux Technology Center), and is proud of the relationship he's forged with the developers. "We've established ourselves as pretty good open source citizens," he says.

Scott Handy, director of IBM's Linux
Software Solutions, who has worked with
Frye since 1999, seconds that opinion. "Dan
understood very early on that a project can
only be successful if it has the support of the community," he says. "It's his vision, knowledge and easygoing style that has helped shape IBM's ongoing commitment to Linux."





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Kim Goodman, vice president and general manager of Dell Networking, is masterminding the company's switch business — driven to succeed for her mentor Michael Dell, herself and the African-American community at large.

BU DIGI CANTON

Ask analysts about the impact Dell is making in the switch market, and they'll say, a respectable dent." Kim Goodman, 37-year-old vice president and general manager of Dell Networking, is the one swinging the hammer.

Goodman, who joined Dell 20 months ago to develop new business lines for the company, has had switch vendors watching the company's heightened activity in the market ever since. Cisco and 3Com have had enough Both recently decided they can no longer, afford to sell switches through Dell's direct model, canceling their reseller agreements with the company.

That Dell now has sold more than 2 million switch ports — half of those in the last eight months — is not a surprise, Goodman says.

"Michael [Dell] was the first to understand that there were some key trends occurring in the enterprise networking space around standardization and Ethernet that could be acquired from some of the silicon providers," she says. "At the same time, we were working with partners and finding a very high attach rate between our servers and network switches. There was a lot of evidence that said we should move forward into the market."

It's also no surprise that Goodman is behind the success.

# From law to commerce

Goodman, who grew up in a working-class neighborhood on Chicago's South side, has been goal-oriented from an early age. Her father, who worked 13 out of every 14 days filling vending machines, and her mother, a teacher, have always encouraged her to strive to be the best.

Goodman's aspirations have always been as much for herself as they have been for African-Americans. "Growing up, my goal was to be the first African-American woman on the Supreme Court," she says.

But Goodman gave up her judicial aspirations while attending Stanford University, from which she graduated in 1987 with a bachelor's degree in political science and a master's degree in industrial engineering." I changed from law to business because I did a study on what could have the most impact for advancing the African-American community. My conclusions came down to more participation in the capital system, as well as improved education," she says.

From Stanford, Goodman funneled her motivation and drive into a telecommunications specialty at Bain & Company a global management consulting

firm to some of the nation's largest corporations. She left Bain temporarily for Harvard University from which she received an master's degree in business administration in 1992.

While at Bain, where she eventually became partner, Goodman saw executives depart for Dell. It was inevitable that Dell CEO Michael Dell, who often hires top executives from the nation's leading consulting companies, would one day come knocking on her door. She

heeded his call in 2000 and now considers Dell one of her mentors, along with Kevin Rollins, Dell president and former Bain partner, and Betsy Bernard, newly named AT&T president, with whom Goodman has worked at various points in her career (see Bernard's profile, page 44).

Goodman made the move to Dell because she liked the company's focus on the direct model and the way it "drives its business based on clear economic decisions of what's best for the customer and what's the best fit for the business." It also helped that more than one-third of Dell executives come out of consulting, which Goodman says "is productive because it enables people to acquire the skill sets to do the data- and metrics-driven insight used in [Dell's] business."

Goodman's goals for Dell Networking are as clear as her personal focus.

"We offer the customer extremely high performance and reliability all backed by Dell service and support in an integrated way so the customer has one number to call for their infrastructure of PCs, servers, storage and switches. And we offer that at 50% less than the cost of the competition."

Goodman speaks the Dell 'direct model' litany like a professional. She seems to believe it, too. That is what Dell and its executives have always relied on to be successful.

### A role model

And Goodman's business acumen has undeniably helped her achieve a model of success the African-American community can follow. In July, Fortune magazine named her one of the most powerful black executives in America. She is often asked to share her story with youth or people early in their careers by speaking at events such as the National Black MBA Association Convention.

But Goodman, who is newly married, isn't all business all the time. She is a role model with the community at large — as a Girl Scout leader and a volunteer and mentor to inner-city youth studying for the Scholastic Aptitude Tests.

She also enjoys outdoor activities, particularly running, and she likes football — enough to own season tickets for the Oakland Raiders. Energetic and focused, Goodman seems bound to thrive.



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Don Haile, CIO of Fidelity Investments Systems, is seen as a leader among leaders with his \$2 billion budget and a penchant for sechnology innovation.

THE HIBBAREL BOOKING W.

When you have 2,500 people working for you and control a \$2 billion budget, power is something you don't worry about too much. As president of Fidelity Investments Systems Company, a division of Fidelity Investments in Boston, Don Haile has the brawn and industry savvy to direct the IT operation of the nation's largest mutual fund company and leading provider of financial services.

"I have the opportunity to influence many of our product decisions and directions, and I am lucky enough to still have some friends inside IBM — and other vendors — who think I know what I am talking about," says Haile, who joined Fidelity in 1998 after 34 years with IBM.

Haile's take-charge style is highly respected inside and outside Fidelity.

"Don's one of those guys we could always count on to cut through the politics and do the right thing. People loved working for him," says Steve Joyce, a former IBM employee who is now director of network technology at software vendor NetlQ. When Joyce left IBM to co-found Ganymede Software, which was subsequently bought by NetlQ, he made sure to include Haile on his advisory board.

# Influence on innovators

Despite kudos from many sources, Haile is modest about his successes.

"Being backed by a terrific technical team inside Fidelity makes my choices and 'pronouncements' pretty solid," Haile says. Those pronouncements need to be dead-on because his team has full responsibility for Fidelity's network implementation. "At Fidelity, I have a great set of network engineers," he says. "My influence is more in the areas of how we use the network — making sure that we fully utilize our current bandwidth and ensuring the network is ready for future demands."

Haile says his team recently deployed real-time video Webcasting and video on demand, and now is evaluating a proposal to replace Centrex with voice over IP to give users enriched services at reduced costs. His challenge for 2003 is to continue reducing network costs by getting more out of current systems. His goal, he says, is to use the current market slowdown to come up with innovative uses of technology to distance Fidelity from competitors.

"People tend to be afraid of change. By forcing change and innovation new ideas will happen Don't get comfortable in any role — reach for the next change," he

says. "Technology, and the proper use of it, can be a major advantage in the finance industry — in fact, it clearly has been one for many years. We have to challenge our people to continue to innovate and take advantage of the new inventions that are coming out to ensure we keep our company ahead of the game."

Beyond leading-edge technologies, Haile — who also watches over the firm's application-development labora-

tories in Boston,

Dallas, Salt

Lake

City and Dublin, Ireland — takes a hands-on approach to day-to-day problems.

# A Japanese approach

"Every problem is an opportunity to change how we do things. If we have a system failure, a network problem, a bug, we ensure we understand how the situation occurred and make sure we have processes put in place to ensure that the problem will not occur again," Haile says. "We have weekly [single point of failure] meetings, which I attend as often as I can, to ensure that the entire organization learns from others' problems."

Asked whether his business style is more like the hardcharging Gen. George Patton or more diplomatic à la Henry Kissinger, Haile instead compares his approach to the Japanese word "kaizen," which means gradual, orderly, continuous improvement. "I believe

that while sometimes it might take longer to get something done, consensus building and kaizen will bruise less egos and will result in real things happening in the long term," he says.

And long-term dedication is what Haile's about. Certainly that's evident in the more than three decades he put in at IBM, a company he left only when it decided to exit the

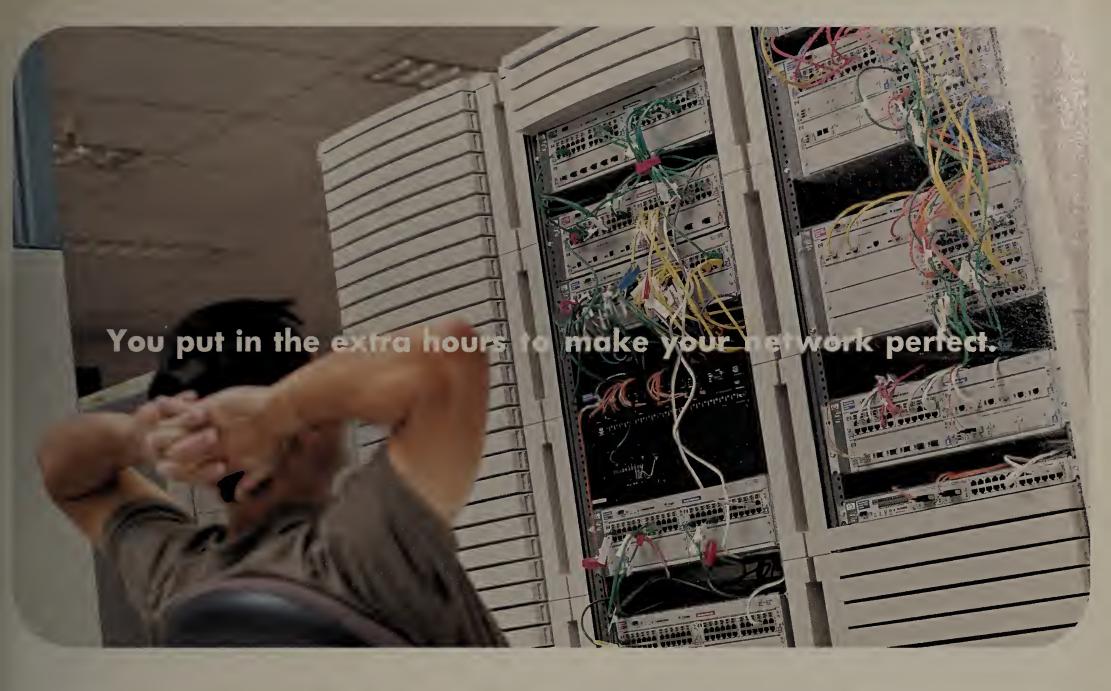
network business he led. But it's clear in his personal life as well. One example is his 38-year marriage. Another is his long-standing allegiance to his alma mater,

The Pennsylvania State
University, which recently
appointed him to the advisory
board for its new College of
Information Science and Technology, Haile graduated from Penn

State in 1964 with a bachelor's degree in electrical engineering and still make a point of attending a couple of football games there a year.

He also finds time to read a good book now and then. He's currently about halfway through *John Adams* by David McCullough, and just bought former IBM CEO Lou Gerstner's book, *Who Says Elephants Can't Dance*.

Haile says he wouldn't change anything he's done in his life, except maybe one thing. "Maybe, given the joy I have in my current job, I would have left IBM after 30 years, instead of waiting until I had 34 years," he says.





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BUILDING CREEK

Dan Schulman, CEO of Virgin Mobile USA in New Jersey, was a hunted man. John Thompson, Symantec CEO and chairman, wanted him as a board director and he wouldn't leave Schulman alone. Phone calls followed a cross-country meeting; despite Schulman's reluctance about joining the board of a company so far from home — Symantec is in Silicon Valley — he didn't feel rejection was an option. "He wore me down," Schulman jokingly remarks.

Persistence is just one of the 53-year-old's characteristics. Charismatic, dynamic, results-oriented — these words also describe him, observers and colleagues say. And selling is in Thompson's blood. He loves the sell so much that, even as CEO, he is known to pass up a few holes on the golf course to be on his cell phone closing deals, big or small.

Getting industry experts such as Schulman and Google CFO George Reyes to join Symantec's board is testament to Thompson's persuasive powers, honed in 28 years at IBM. There, he rose to the top leadership position at IBM Americas before leaving for the CEO spot at Symantec in April 1999.

Observers say Thompson's IBM-trained discipline has served him well in revitalizing Symantec, a consumer-oriented company that was foundering.

# Enterprise evangelist

Thompson's strategy calls for transforming Symantec from a company almost completely consumer-oriented to one focused on the enterprise market. Toward that end, he has sold off Act, a personal management tool, and Visual Café, a software development platform, and bought 10 enterprise-related software and services suppliers. Today, 65% of revenue is from corporate customers, just shy of Thompson's 70% goal, compared with 35% in 1999.

As part of the transformation, Thompson replaced more than half of the original 2,300-person workforce with people who knew the enterprise market. Reyes acknowledges that Thompson's drive toward the enterprise market caused dissention as staff members "had to put up and commit, or leave." But, Reyes adds, Thompson invested considerable time and effort in evangelizing about the enterprise. "John clearly invested in the buy-in process of employees. He's a caring man but he's also a very good businessman," he says.

Thompson's determination to win even more of the corporate market is illustrated by his billion-dollar-plus shopping spree that has netted Symantec 10 enterprie-related software and services vendors. This includes last summer's near-simultaneous acquisitions of Monatain Wive for security information

management software; Recourse Technologies, for its intrusion-detection system; Riptech, for its security monitoring system; and SecurityFocus, for its security alert and bug-tracking services. "You don't find many CEOs that have the courage to [acquire four companies at once]," Reyes says. Through its acquisitions, Symantec's workforce today stands at 4,200-strong.

Thompson revels in being a high-profile CEO, which lately means promoting cybersecurity to government officials. In September, Thompson joined the National

Infrastructure Assurance Council, providing advice to the U.S. government on security of critical infrastructure. Thompson says he will push for cybersecurity education.

Despite his extracurricular activities, Thompson is not ready to lose his high profile at Symantec or among its customers yet. Last January, Symantec named John Schwartz as president and COO, leading some to wonder whether Thompson was getting ready to resign. Thompson dismisses the suggestion and jokes that he will be at Symantec for "another 10 years, until 1 retire. I'll be 63 by then."

Having Schwartz frees Thompson to do what he does best — sales and marketing. And it gives this New Jersey native more time to explore California and to duck hunt, one of his favorite pastimes.

# Suited up and ready to go

Thompson says too much emphasis is put on the differences between East and West Coast work cultures, but he does admit to finding some elements of Silicon Valley casualness distasteful. "I want people to come in ready for work, not to spend a day at the beach. I want people suited up and ready to go," he says, adding that the phrase "suited up" is metaphorical rather than reflective of his IBM shirt-and-tie upbringing.

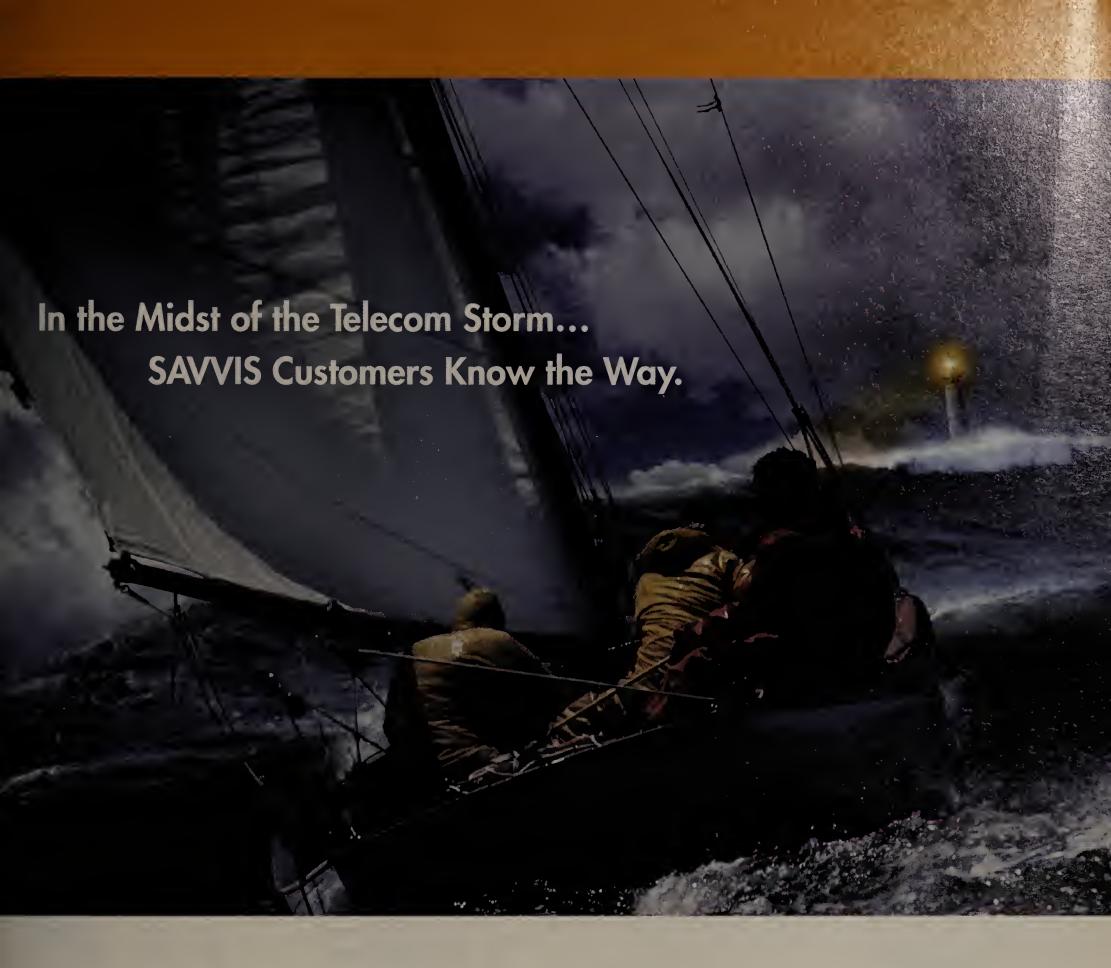
Perhaps this attitude stems from his upbringing. Thompson's parents — his father a postal worker and his mother a teacher — engendered an appreciation for respect, integrity and education. Thompson himself received a master's degree in management science from the Massachusetts Institute of Technology's Sloan School of Management and a bachefor's degree in business administration from Florida A&M University.

Still, Thompson considers changes he's made at Symantec subtle. "I didn't change the company culture. I've tried to look at the things the company stands for and achieve a balance. I want Symantec to focus on sustainable results; understanding the needs of large companies — not what the channel needs for this quarter," he says.

Likewise, Thompson says he wants industry observers to focus on Symantec, rather than himself. As such, he says he dislikes being referred to as Silicon Valley's highest-ranking African-American executive. "If it brings attention to Symantec, I'm happy to play along with it, but it should be of no conse-

quence," he says.







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Our annual survey of readers reveals that acc reflect poorly on CEO power, but improved cus recharge it.

BY JULIE BORT

What makes a good CEO? That's the question of the era as former powerful network industry leaders continue to sink like so many storm-tossed dinghies. In the past three years, the companies featured in our annual Powerometer survey have replaced 11 CEOs - akin to 50% turnover.

> Granted, at some companies, such as AT&T and IBM with C. Michael Armstrong and Lou Gerstner, CEO retirements were planned well in advance and successors — David Dorman and Sam Palmisano, in these cases — long groomed for top corporate command. But most CEO exits stand as another measure of the industry's seemingly endless unrest.

This storm is different from the typical economic dip, too. It has been worsened (if not caused) by many of these dismissed CEOs. Corporate captains should hike out, right the keel and get their organizations — and consequently the whole industry — back on course. Instead many entered the galley, extracted cooked books then burned workers, investors, customers and themselves.

So the anticipated 2002 midyear recovery never surfaced. Not surprisingly then, trust in the leaders of the network industry, while not erased, certainly has dwindled. So say the 250 readers who participated in this annual Powerometer survey. Almost three-quarters of participants agreed that recent accounting scandals have hurt the power of network industry CEOs.

Using a scale of 1 to 100, readers rated a CEO's power, with a higher number meaning more power. Comparing this year's means — the Power Ratings with last year's, readers did not grant a single CEO more power and dropped the Power Rating of half by 10% or more. Moreover, the mean for all CEOs sank to its 1998 level from a five-year high in 2001, a drop of 6.2 points.

Those penalized come primarily from the stagnant telecom sector: Duane Ackerman of BellSouth, Bill Esrey of Sprint, Ed Whitacre of SBC Communications. Interestingly, readers also docked Carly Fiorina's rating by a hefty 12.3%, presumably because she has much to prove at a post-merger Hewlett-Packard.

Novell's Jack Messman is the good news/bad news story of the survey. Although readers deducted 10.6% from his Power Rating, landing him among the biggest losers, they chastised so many others more severely that Messman yielded his last-place spot to WorldCom's leader at the time of the survey, John Sidgmore — and outranked two other telecom executives to boot. (When we conducted our survey in the fall, Sidgmore had made clear his intent to leave WorldCom, but Michael Capellas — formerly HP president — had not yet joined the company as his replacement.)

Respondents offer this basic advice for improved power: Service the customer Half said the ability to please a customer was more important than the

skill of pleasing Wall Street in determining a CEO's power. Those who would make the customer king know this — happy customers mean better revenue, and that's good for the Street, too.

### 2002 Power Ratings

In this year's Powerometer reader survey, respondents showed their distaste for the state of the network industry by lowering the Power Ratings of CEOs across the board. Ratings were designated on a scale of 1 to 100, with 100 being the most powerful.

2002 Rank	CEO	2002 Power Rating	2001 Power Rating	Change	2001* Rank
_1	Cisco's John Chambers	72.1	73.0	-1.2%	1
2	Microsoft's Steve Ballmer	69.4	72.5	-4.3%	2
3	Intel's <b>Craig Barrett</b>	63.5	69.2	-8.2%	3
4	IBM's Sam Palmisano**	59.8	N/A	N/A	N/A
5	Sun's Scott McNealy	58.4	63.6	-8.2%	7
6	Dell's Michael Dell	58.1	65.5	-11.3%	5
7	Oracle's <b>Larry Ellison</b>	57.7	64.8	-11.0%	6
8	AT&T's C. Michael Armstrong***	53.7	59.0	-9.0%	9
9	Hewlett-Packard's Carly Fiorina	53.5	61.0	-12.3%	8
10	3Com's Bruce Claflin	50.7	54.9	-7.7%	19
11	Verizon's Ivan Seidenberg	50.0	56.9	-12.1%	11
12	EMC's Joe Tucci	49.7	56.5	-12.0%	13
13	Nortel's Frank Dunn**	49.7	N/A	N/A	N/A
14	Computer Associates' Sanjay Kumar	48.0	53.3	-9.9%	21
15	SBC's Ed Whitacre	46.5	54.3	-14.4%	20
16	Sprint's Bill Esrey	46.2	55.1	-16.2%	18
17	Novell's Jack Messman	44.9	50.2	-10.6%	24
18	BellSouth's <b>Duane Ackerman</b>	44.4	53.2	-16.5%	22
19	Qwest's Richard Notebaert**	39.2	N/A	N/A	N/A
20	WorldCom's John Sidgmore***	33.8	N/A	N/A	N/A

- Survey included 25 CEOs in 2001.
- New to CEO job since 2001 survey.
- \*\*\* Still CEO when survey conducted (in Sidgmore's case, also new to CEO job since 2001 survey)

SOURCE NETWORK WORLD S 2002 POWEROMETER SURVEY







# The biggest losers

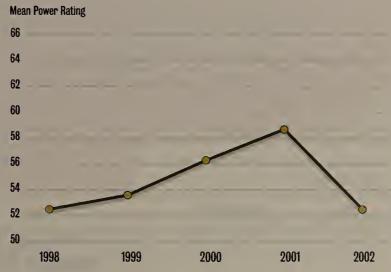
Readers reduced the Power Ratings of the following 10 CEOs by about 10% or more this year over last.

2002		2002 Power	2001 Power	
Rank	CEO	Rating	Rating	Change
18	Duane Ackerman	44.4	53.2	-16.5%
16	Bill Esrey	46.2	55.1	-16.2%
15	Ed Whitacre	46.5	54.3	-14.4%
9	Carly Fiorina	53.5	61.0	-12.3%
11	Ivan Seidenberg	50.0	56.9	-12.1%
12	Joe Tucci	49.7	56.5	-12.0%
6	Michael Dell	58.1	65.5	-11.3%
7	Larry Ellison	57.7	64.8	-11.0%
17	Jack Messman	44.9	50.2	-10.6%
14	Sanjay Kumar	48.0	53.3	-9.9%

SOURCE: NETWORK WORLD'S 2002 POWEROMETER SURVEY

### Trust bust

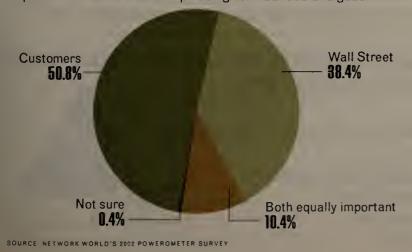
With corporate accounting scandals rampant in 2002, peaking with WorldCom's bankruptcy, trust in CEOs plummeted this year.



SOURCE: NETWORK WORLD'S POWEROMETER SURVEYS, 1998-2002

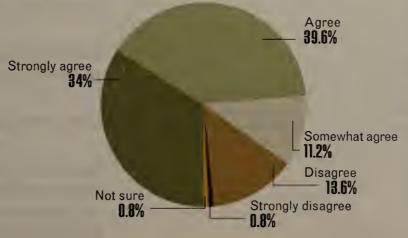
### Customers beat the Street

Asked what factors most into their assessment of CEO power, most readers say the ability to please customers is more important than the skill of pleasing Wall Street analysts.



## Accounting For scandal

When asked whether recent accounting scandals have hurt network industry CEO power across the board, readers overwhelmingly agreed that they have.

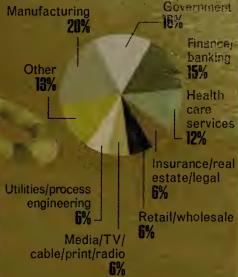


# 2002 POBIESSIA DEMORRADHESS

In our annual Poweremeter approximate ask 250 readers to rank the cover of renwork vendors and their CESe Tables a new at what types of readers pages as the the survey.

# Industry base

Participating readers belong to be variety of industries, with no ladustries contributing more than one-fittin of the 250 respondents.



# Tibles of IT authority

All participants held IT-related titles.



# Management breakdown

Respondents falling under the IT management category hold these specific job titles.

MIS/IT/IS/DP manager or director

36%

LAN, WAN or network manager or director

22%

Telecommunications manager or director

8%

Senior, vice president/vice president, MIS/IT/IS/DP

8%

Other management

28%

SOURCE METWORK WORLD'S ALM ADVINGE

To see how readers assessed company power, see stuly

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Cuts toll costs	✓	
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Traditional voice calling	✓	✓
VoIP calling	✓	
IP and traditional phones	✓	
Voice mail	✓	✓
Automatic Call Distribution (ACD)	✓	$\checkmark$
Automated Attendant	✓	
Unified Messaging	✓	
Web interactions: Web push, chat, clic	k-to-talk 🗸	
Home-based teleworkers/call center	agents 🗸	
Built in redundancy	<b>✓</b>	<b>✓</b>
Integrated Contact Center	<b>√</b>	

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POWER STRUGGLES



A battle royale is brewing among the server titans. IBM, Hewlett-Packard and Sun are busily mapping out strategies each hopes will give it the edge in the envisioned new world where self-healing, self-managing servers rule the network.

IBM has been the most vocal of late, aggressively promoting its autonomic computing concept, which includes self-healing, self-managing servers. Alan Ganek, vice president of IBM's new autonomic computing division, paints a compelling picture of the networked world in which ultrasmart servers operate.

When outfitted with special software such as IBM's Electronic Service Agent, he says, enterprise servers that are having problems automatically would send information about symptoms to a computer at IBM. Tapping into a comprehensive problem database, the computer would analyze the problem report and initiate corrective actions. It might send an electronic response to fix the problem itself, place a call to the company's administrative staff with recommended fixes or dispatch an IBM engineer to perform repairs.

"The result is simple — problems are fixed quickly, sometimes before you even knew you had a problem; your infrastructure becomes more resilient and downtime is minimized, thereby lowering your maintenance costs," Ganek says.

## A ubiquitous problem

Though generating a lot of buzz recently, the notion of self-managing servers has been around for several years within the high-end server market, says Vernon Turner, a group vice president at IDC. The battle is heating up now, he says, because of one simple fact: "As servers become more and more of the industry standard or commodity devices, it is harder to differentiate each vendor from another."

Couple this with the reality that enterprise infrastructures commonly consist of thousands of servers — servers that users are demanding be easier to manage, be always available and run at top capacity — and vendors have no choice but to rejuvenate their product lines, Turner adds.

Richard Fichera, a vice president with Giga Information Group, attributes intensifying efforts around self-managing servers to an

identical set of customer problems each vendor faces: stranded capacity, complex installations, difficulty of provisioning new applications and services quickly, and the inability to manage server networks on a service vs. an element basis. "Server management is a ubiquitous problem across all installed bases," he says.

And as server management issues escalate within enterprise organizations, talk of autonomic computing and utility data centers has been a real attention-getter among users. "The ability for anything to possibly manage itself is something that we would like to see, and it's currently on our radar screen," says Aaron Merriam, network operating system/messaging specialist at Hannaford Brothers, a regional supermarket operator in Scarborough, Maine, that has about 400 servers today.

One potential promise Merriam sees in self-healing, self-managing servers is cost-containment. With smarter servers, Hannaford could potentially maintain IT staffing levels while increasing the number of servers. Another potential boon from self-healing, self-managing servers would be the opportunity to give IT staff the time to focus on the future rather than always operating in maintenance mode, Merriam says.

# The battle plans

IBM realized autonomic computing would be an industry "grand challenge" more than a year ago, when it launched Project eLiza, the code name for IBM Server Group's efforts to deliver autonomic computing capabilities, Ganek says. The features, many of them originated for IBM mainframes, will now be deployed across IBM's eServer family.

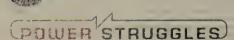
While IBM has garnered much attention for its autonomic computing splash, HP actually has an 18-month lead in self-managed servers with the Utility Data Center (UDC) line it introduced in November 2001, Gartner says. UDC products, which let administrators provision services on demand, include linked server, storage and network operations offerings that are integrated and deployed by intelligent management software. The HP UDC allows for remote server management and includes management racks that automatically discover the topology of a user environment. It also offers an Integrated Service Management rack, capacity planning and optimization software, and storage arrays. With a UDC infrastructure, once servers are wired together, configuration and feature changes are handled via software updates.

See Server war, page 64

Confusion

Web Services Ball

at the



# THE NEW 1 SERVICES DANGE

IBM, Microsoft and Sun have come to the Web services ball with opposing ideas over a so-called choreography standard that would automate workflow.

BY ROBERT MCMILLAN

Choreography standards do not spring up overnight. The first crude set of

spring up overnight. The first crude set of choreographic symbols took more than 400 years and dozens of abandoned efforts to evolve into Hungarian dance master Rudolf von Laban's widely accepted notation for representing the ordered and complex movements of dance.

The developers working on Web services choreography standards expect to take less time than the dance master of yore, but the difficulty of the task at hand is much the same. They have to finesse technology nuances and please a variety of constituencies. At issue is how to define a standard way of letting business processes talk to each other during the course of a Web services transaction. Standardization would make Web services easier to develop — and deploy.

With Web services now, if a company wants to share parts of an application with a business partner, it can talk about the ports and operations it will expose using a Web Services Description Language (WSDL) file. The WSDL file would describe simple operations such as "get fare quote" or "book ticket." But the company has no standard way of talking about the business processes that govern all these operations. WSDL can't tell an application not to bother trying to book a ticket before it's received a fare quote — at least not in any standardized way.

To learn the business logic behind partner applications, developers must create a workflow document to which they can code. With Web services choreography, workflow descriptions are standardized. Instead of reading and manually coding to workflow specifications, developers could use typical development tools to handle this work.

Choreography standards put you "way ahead of the game," says Yaron Goland, a technologist at BEA Systems. "You're no longer sitting there trying to figure out, 'Now if I call this particular interface, what the heck do I do next?"

BEA is working to incorporate Web services choreography features into its WebLogic Workshop development tool, and its competitors — IBM,

Microsoft and
Sun, for example — are
doing the same with their wares.
And that's where the problems begin.

On the dance card

In late June, Sun, along with BEA, Intalio and a number of other supporters, submitted a draft Web choreography specification, called the Web Service Choreography Interface (WSCI), to the World Wide Web Consortium (W3C). One month later, BEA, IBM and Microsoft published an alternative, the Business Process Execution Language for Web Services (BPEL4WS). Now Sun, Microsoft and IBM are sparring over which specification will become the standard. On the outside are vendors such as BEA and Oracle that are urging a convergence of the two specifications.

Users also are interested in convergence because it would give them a greater range of tool choices and, more importantly, because the alternative could result in a nasty standards war. Choreography standards are becoming increasingly important as company and customer business processes get more intertwined, says Hao He, a software architect with Thomson Legal & Regulatory, a major law and tax information publisher in St. Paul, Minn.

Thomson interacts with dozens of government agencies and law firms each day, indexing and editing government regulations and producing books, CD-ROMs and online databases of government regulations. Currently, Thompson uses custom-developed software to manage order fulfillment and to share inventory information with branch offices and customers. As Web services orchestration servers become available, the company hopes to use standard software from a variety of vendors to manage these processes, He says.

"It definitely helps if we can automate as many processes as possible using a standard technology," says He, who is a member of the W3C's Web Services Architecture Working Group. "The W3C is trying to identify a middle ground between [WSCI and BPELAWS]. This is challenging

See Standoff, page 64



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# MAY OLD DATA SERVICES THRIVE

Optical and Gigabit Ethernet services promise big bandwidth, performance boosts at great rates. So why aren't they being used?

BY JENNIFER JONES

Optical and Gigabit Ethernet services, hailed during the telecom boom years as killer replacements for costly ATM, frame relay and leased-line options, have yet to materialize as significant enterprise alternatives - to the frustration of network executives shouldering bandwidth-heavy applications.

> User organizations such as the Corporation for Education Network Initiatives in California (CENIC) complain of their inability to get carriers to make good on their new service promises. "We've had trouble getting [incumbent] carriers to adopt Gigabit Ethernet as a connection interface," says David Reese, CTO for CENIC, in Los Alamitos.

But the incumbents point the finger back at their customer bases. Larger providers in particular blame their reluctance to embrace new optical and Gigabit Ethernet services on weak demand. They say the majority of corporate users aren't too enthusiastic about these services.

The truth is, the reason many incumbent carriers have backed off such service plans might have more to do with a lack of competitive incentive than with slow user uptake. Incumbents had reluctantly moved into optical and Gigabit Ethernet primarily in reaction to specialty upstarts such as Broadwing Communications and Yipes Enterprise Services, says Tim Krasney, managing director of Yankee Tek Ventures. When

**WHAT'S AT STAKE?** ing financially, Summary: Enterprise users in bankruptcy await Gigabit Ethernet options, while large carriers

linger on rollout efforts to faded fast. protect precious ATM, Still, enterprise frame relay and privateusers have not pushed

Upponents: Major incumbent carriers and big corporate users.

line revenues.

**Dublook:** Gigabit Ethernet adoption rates will inrease, but slowly.

In Mact. As the footng continues, users ick buying more a la services.

the small carriers started founderwith a few ending court, the competitive impetus

their incumbent carriers hard enough for these offers, industry watchers say. Absent such pressure, entrenched players naturally have chosen not to displace lucrative ATM, frame relay or privateline offerings with services that might reduce their revenue. "The move to Ethernet would mean swapping out accounts they've already got with something that could be as much as 30% cheaper," notes Howard Anderson, senior managing director at Yankee Tek and a Network

Looking out to 2006

World columnist.

Despite the setbacks, nobody is writing off

optical and Gigabit Ethernet services. RHK projects a \$4 billion market will unfold around efforts to stretch LAN-based Ethernet technology into carrier networks, but it will take several years. By 2006, the firm says, enough large carriers will have embraced Gigabit Ethernet to bring services to almost 1 million potential customers. They'll do this by building up their networks with Ethernet switches, optical edge devices or wave division multiplexing platforms, according to RHK.

Some users find the outlook disappointing. "We have been surprised that there has been such a great deal of inertia," says Randy Anderson, director of network engineering and technology at George Mason University (GMU) in Fairfax, Va.

GMU constantly examines options for outfitting its student base with enough network power and routinely adds costly T-1

> or DS-3 lines, Randy Anderson says. "We were looking at [Gigabit Ethernet] services when the market was better and the telecom

industry was at its peak. We had a few nibbles. Some of the carriers we were talking to were promising 100-megabit Ethernet and 10-megabit Ethernet. But nothing ever really materialized," he says.

Common carrier practice has been to "support Ethernet as loudly, but as little, as possible,"YankeeTek's Krasney says. He says when customers inquire after Gigabit Ethernet, carriers tend to pull out literature on the services then shift them quickly toward private-line solutions. As a further discouragement, analysts say, incumbents haven't been pricing Gigabit Ethernet services too attractively.

To spur Gigabit Ethernet, larger carriers must show more interest in generating offers with reduced rates and increased performance over ATM, frame-relay and leased-line services. "People don't get excited about a change unless it will cost 20% less and has much more functionality," Krasney says.

Perseverance pays off

Determined customers say they hold out hope for more Gigabit Ethernet options but realize it will take

legwork to get them. "We are really pushing the carriers," CENIC's Reese says, noting that the organization has gotten Gigabit Ethernet services bids from Qwest, Level 3 Communications, Verio and Cable & Wireless.

GMU recently has been successful in getting Verizon to offer Gigabit Ethernet services through a modification to an existing state contract. During contract negotiations, Verizon executives were aware that GMU and other state universities were eager to get the services, Randy

Anderson says. "This was a play by Verizon to head off competition."

Jones is a freelance writer in Vienna, Va. She can reached at jjwriterva@aol.com.



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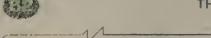












POWER STRUGGLES

# FOR THE NEW Secure Sockets Layer's arrival on the VPN scene has IP Security-based VPN vendors rethinking their product portfolios.

VPNs based on the IP Security protocol have held a grip on the market, but an alternative using Secure Sockets Layer is steadily gaining ground.

> Few people familiar with network security consider SSL a wholesale replacement for IPSec as a VPN protocol. But SSL proponents say that protocol is less-expensive and easier to deploy when workers need remote access to Web applications such as e-mail and corporate intranets. And now, traditional IPSec VPN vendors are scrambling to add SSL to their product mixes to meet demand.

Browser-based SSLVPN products differ from IPSec VPN wares in that they do not require companies to install VPN client software on remote devices. Users who can authenticate to a company's network can make a secure connection from any laptop or desktop PC with a browser. That's because SSL firewall ports generally are kept open, so firewalls need not be reconfigured to provide access.

BY BOB VIOLINO

With IPSec VPNs, each remote device must run client software, which must be updated as necessary. Also, firewalls and the IPSec devices must be configured in tandem to allow network access.

# SSL in the market

Market researchers predict that worldwide sales of SSL-based VPN gear will increase during the next several years. Infonetics Research expects market growth from about \$56 million this year to an estimated \$840 million by 2005. However, the firm says, IPSec products will continue to make up a huge share of the VPN market. Infonetics pegs sales of IPSec VPN and firewall hardware at \$1.5 billion this year and \$2.5 billion in 2005.

"SSL will address all those [remote workers] who don't really need access to many applications. It's a simple way

to give them access to things like e-mail and benefits and payroll information. Those users who need access to a broad range of applications that are not all Web-based will require IPSec clients," says Jeff Wilson, executive director of Infonetics.

But the proliferation of Web-based applications — and the growing reed for remote access — has turned SSL into a hot topic — a necessary development for traditional IPSec VPN vendors.

Check Point Software, which unveiled an SSL-based or "clientless" VPN

in July says SSL is ideal for companies that need to exchange data with business partners via extranets but don't want to install VPN clients. IPSec VPN vendors such as Nortel and SonicWall agree. Nortel introduced the Alteon SSL appliance in September; SonicWall began offering SSL products when it acquired Phobos two years ago. In the meantime, NetScreen Technologies says it's evaluating an SSL offering through possible partnerships.

Other IPSec VPN proponents, such as Symantec, still are evaluating how to fit SSL into their product lines. The holdup in part stems from these vendors having more or less viewed SSL as a competing technology. But as demand grows for clientless VPN connections, logic dictates

> that vendors add SSL-based products to their lineups.

Smaller vendors that have recognized the need for SSLVPN wares include Aspelle, Aventail, Neoteris and Whale Communications.

# SSL by design

Some user companies are finding they want both SSL and IPSec VPNs. Quad/Graphics, a Pewaukee, Wis., printing services company, provides connectivity for the limited number of employees who need access to production systems and other non-Web applications via an IPSec-based VPN from Cisco. But it has given the majority of employees remote intranet and e-mail access via an SSL-based VPN using Whale's e-Gap Remote Access Appliance.

Before Quad/Graphics installed the Whale SSL product four months ago. most employees didn't have a remoteaccess option at all. "With 10,000 employees potentially wanting to get access from home or on the road, we didn't want to have to install 10,000 [VPN] clients," says Damian Drewek, director of technical services at Quad/Graphics."We knew it would be a maintenance nightmare."

Whale's SSL appliance runs on a server

in the company data center. Using this clientless approach, the company can provide secure connections without having to rewrite applications on those thousands of end-user devices, Drewek says.

Deloitte Consulting in New York also uses a combination of SSL and IPSec VPNs. Most of the firm's employees access the corporate network while in the field via an SSL-based VPN from Aventail. Deloitte limits the use of IPSec VPNs, which it bought from Nortel, to those people who



See VPN, page 64

# Special Report

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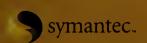
his career as a consultant analyzing, designing and deploying IP networks. His career of over twenty one years has seen a

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# POWER STRUGGLES

### Server war

continued from page 57

Sun, while avoiding the self-managing buzzword, is pushing self-monitoring services heavily as part of its N1 open architecture. Sun previewed the multiphase N1 scheme in February and unveiled the formal road map in September.

Phase 1 calls for the virtualization of all network elements — servers, storage and cabling included — for easier and more cost-efficient management than is possible today. Through new system software, available now, users would be able to transform individual computers, network and storage systems into an aggregated pool of resources. The software will allocate, monitor and meter resource usage, in part for service-level management and

# WHAT'S AT STAKE?

Summary Leading vendors are trying to best each other with wide-ranging strategies for building advanced intelligence into their servers making them capable of self-healing and self-management.

Opportion IBM, with its autonomic computing; HP, which touts the Utility Data Center; and Sun, with its N1 initiative.

achieves the tightest integration among the chip architecture, the I/O configuration, the operating system and the suite of applications taking advantage of these will be the most successful.

USEP impact: These advanced servers will give enterprise users the ability to better use server capacity and to grow the number of servers with out adding staff, while reducing the time spent on administrative minutiae.

accounting purposes. The software also will be responsible for life cycle management of services, performance assurance and security.

Subsequent phases will enable service provisioning and policy automation. Overall, N1 enhancements will be found throughout Sun's product line, from operating and file systems to servers and development tools. Yousef Khalidi, N1's chief architect, says the main difference between managing servers and other network resources today and tomorrow, under Sun's virtualized architecture: "Today, IT administration has to deal with every service component individually. With N1, in a 'virtualized' environment, much of that low-level complexity gets managed for you so that you don't have to manually perform all of those tedious, time-consuming and error-prone low-level tasks."

### To be victorious

IT managers can benefit from having an enterprise environment capable of being treated as a single entity, IDC's Turner agrees. "The major server vendors are heading in the right directions," he says, noting that IBM, HP and Sun each have unique leads in particular parts of the race, while none of them is showing a clear market lead.

Victory in this server war, Turner says, will go to the vendor that achieves the best integration among the chip architecture, the I/O configuration, the operating system and the suite of applications taking advantage of these, resulting in a coherent user solution.

Ryan-Garcia is a freelance writer in Coram, N.Y.She can be reached at freshcontent@aol.com.

### Standoff

continued from page 58

because those two specs are quite different."

# Stylish differences

The main difference between WSCl and BPEL4WS is one of scope.

WSCI is about Web services choreography, while BPELAWS includes choreography and orchestration specifications. This means that while both technologies cover the flow of messages between applications at a high level, BPELAWS also talks about specifics, such as where to store incoming messages or what specific container to use as the body of the message. "Choreography says, 'It's supposed to look like this.' Orchestration says, 'It has to look like this,' says Joanne Friedman, a Meta Group vice president.

But the technical differences between the two standards are not insurmountable, BEA's Goland contends. "WSCI doesn't have the same [orchestration] features, but they would be fairly easy to add," he says. "In the end, the features will all be the same."

The W3C appears to agree. It says it would like the chance to consider both specifications, and it is lobbying IBM and Microsoft to submit BPEL4WS to the W3C rather than to any other group, such as the Organization for the Advancement of Structured Information Standards. At the W3C, parties would hash out the issues in a formal Web Services Choreography Working Group.

While IBM and Microsoft haven't committed their work to a standards body yet, observers say a standards war is unlikely. They point to Sun's recent membership in the Web Services Interoperability Consortium, a group it previously shunned while IBM and Microsoft played central roles. Sun's participation could help thaw the frosty relations.

# WHAT'S AT STAKE?

Summary: Software vendors are battling over establishment of the Web services workflow standards that will likely form the cornerstone of post business-to-business application development.

Upponentia: Sun, with the Web Services Choreography Interface, vs. IBM and Microsoft, with the Business Process Execution Language for Web Services.

Outlook: Each side will try to find a forum for consolidation shortly.

User impact: Absent a choreography standard, developers are stuck with the more difficult and drawn-out task of custom coding Web services workflow processes, and application development is delayed as a result.

### Do a slow dance

Absent a single Web services choreography standard, Web developers should chart a prudent course, Friedman says. They should be certain that Web services provide a value-add to their businesses, and they should take the long view of their goals. "Then they'll have a better perspective with which to look at these specs, because right now," she says, "developers reading specifications without business use cases or a business reason to use reference implementations are looking at things in a vacuum."

McMillan is a freelance writer in San Francisco. He can be reached at bob@filbert.net.

### VPN

continued from page 62

need to access applications running in the firm's four data centers.

Larry Quinlan, Deloitte ClO, likes SSL VPNs for their ability to traverse firewalls without the need for firewall reconfiguration. "That's important because the security department is not eager to reconfigure the firewall," he says.

On SSL's downside, Quinlan says, is the typical limitation to Web applications. But IPSec has its drawbacks, too — it doesn't easily traverse some firewalls, which can cause problems for mobile workers who need to get access from hotels or client offices, he adds.

SSL's limitation to Web applications has given some users pause. Divine, a professional services company in Chicago, mainly uses an IPSec VPN from NetScreen Technologies. Many of its remote workers are consultants who need broad application access, says Chuck Horvat, director of network services at Divine.

Divine hasn't found a need for SSL VPNs, Horvat says. Instead, the company relies on an application's Web front end and built-in SSL encryption. Microsoft Outlook is a case in point. Remote workers are authenticated with a user identification and password to access e-mail and the corporate directory.

"For us, it's best to have an IPSec VPN pipe because of the applications people need to access," Horvat says. "They can get to e-mail via SSL, but the majority of people still want to do things other than e-mail. Either solution is great, but each for very specific requirements."

# WHAT'S AT STAKE?

Summary: Traditional VPN vendors must figure out how to offer Secure Sockets Layer VPN products.

Ipponents: SSL VPN vendors include Aspelle, Aventail, Neoteris, Netsilica and Whale Communications. IPSec vendors include Cisco, NetScreen Technologies, Symantec and WatchGuard Technologies. CheckPoint, Nortel and SonicWall support both.

Outlook: Each type of VPN serves a useful purpose.

User impacts: Secure remote access for Web and e-mail connectivity becomes more feasible with SSL VPNs.

### SSL in the end

While many say SSL will replace IPSec for VPNs to Web applications, most industry watchers say the two types of VPNs will coexist, with plenty of room in the market for both.

Infonetics' Wilson sums it up: "They will work together to build a bigger remote access market."

Violino is a freelance writer covering business and technology. He can be reached at bvio lino@optonline.net.



PERSONAL POWER

# DON'T BE A COMPEGNATION COMPE

Saving yourself from corporate finger-pointing can be easy.

Communicate and collaborate with business peers, and be sure to document those meetings.

BY SUSAN MARKS

A longtime national retail chain struggles to stay afloat and eventually declares bankruptcy. To explain away its shortcomings, the company in part blames out-of-control IT expenses associated with the launch of an e-commerce initiative that didn't produce expected revenue. Executive heads roll. The CIO is the first to go.

Welcome to today's world of strained bottom lines, where stressed-out corporate directors often lay blame for financial troubles on big IT or network projects they say have run over budget, haven't delivered on revenue expectations or have otherwise gone awry. Fortunately, management experts say, you can stop the finger from pointing in your direction — and become a more powerful corporate player along the way.

Stopping the blame takes a combination of communication, documentation and collaboration with executive-level management, end users, vendors and other involved parties, successful IT and network managers say.

Operating in a vacuum is the kiss of death, says Robert Doyle, a partner with Tatum ClO Partners, a group of IT experts in Atlanta. In his 30 years in the business, Doyle has served as ClO or the equivalent for a number of multibillion-dollar corporations. IT executives must be businesspeople first, building relationships so corporate peers view them as partners and not as "someone in the technology department." Then, IT isn't an easy scapegoat if a problem arises.

IT executives that go it alone are almost always the scapegoats, says David Siesel, another Tatum partner. He, like others, urges network executives to communicate regularly, through executive-level steering committees, project-participant and enduser meetings, financial oversight committees or some other form of governance. "You almost can't, in an IT service kind of role, overcommunicate," he says.

# **Allied forces**

Siesel recounts walking in as the then-new CIO at a student loan guarantee corporation that already had spent \$5 million toward developing a complex set of applications. He quickly realized the applications weren't viable and the technology inappropriate for a nonprofit with serious budget constraints. He also found executive-level management had unrealistic expectations of total cost, time frame and implementation. Obviously, at play was a massive breakdown in communication between the corporate board and network executives. Just as clear, Siesel remembers, was that the

board would blame IT.

Rather than voicing his concerns widely and initiating the finger-pointing, Siesel garnered a corporate ally in the vice president of operations and then spent three months working behind the scenes to convince executive management that the applications were not a good choice. The result was that the company built an entirely new set of successful applications that it has since licensed to other student loan guarantee corporations.

# Power points

Stephen Rood, a New York IT executive and CIO consultant with Tatum, has seen plenty of user organizations try to pin company problems on IT. In his 12 years in the business, he's successfully managed about \$200 million in corporate IT projects.

Rood shares his secrets for making sure the IT department doesn't become the scapegoat for executive management:

- First get buy-in from at least one senior executive manager as a project sponsor.
  - Meet regularly with the project sponsor.
    - Hold mandatory weekly project meetings that include the user group, the technologists and other relevant participants.
      - Document the details. Take formal notes at weekly project meetings (Rood uses a document template to make it easier); then distribute the written summary to all attendees and mandate that everyone signs off in writing that they have read the summary, agree with what has happened and agree to the next step. Then file the documents in a three-ring binder. That in hand, Rood then meets monthly or

more often depending on project needs —
with the senior executive-level project sponsor to
go over everything. "IT avoids being the scapegoat or

the blame person ... [because] down the road — when someone says, 'Hey something didn't materialize,' 'Something is out of the original budget,' or 'We had to do something else' — it's all documented there," Rood says.

Unfortunately, blaming IT seldom addresses the real problem an executive management shortcoming, says Gopal Kapur, president of the Center for Project Management in San Ramon, Calif.

"Technology is the accelerator of the current state of any organization," Kapur says. "If the organization is pointed in the right direction, technology will accelerate the travel to the end goal. If the organization is pointed in the wrong direction, technology will help take it to hell faster. It happens to company after company."

Marks is a freelance writer in Denver. She can be reached at signarksco@aol.com.

IT experts the consulting time.
Tatum CID Partmets say successful?
executives to the following use!

Strategy:
Identify IT
trends and build
IS strategies
aligned with a
company's
industry and
business model

## Leadership:

Build horizontal and vertical relationships within the organization and externally, in the planning, forecasting, budgeting, procurement and implementation of IT.

# Operations:

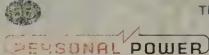
Direct the activities of IT management to ensure that appropriate systems, staffing, policies and procedures are in place.

# Technology:

Manage the process by which initiatives to develop or enhance IS software and hardware are evaluated, selected and implemented across all aspects of a company business.

# Program management:

Overses project management processes and protocols celated to the implement tation of information technical organic attacks change doubt as a change doubt a



Doing security well can be a thankless job. But following these four tips will get you the recognition — and budget — you deserve for keeping the corporate network safe.

BY JOANNE CUMMINGS

It's a well-known fact: Network security is a thankless job where success breeds anonymity. The more successful you are, the fewer incidents you have to report and the fewer opportunities you have to interact with upper management and gain respect from the business side of the house.

Plus, perfect performance is the expectation, says Mike Phillips, CIO and vice president of IT at Texas Tech University Health Sciences Center in Lubbock. "Security has risen to virtually an entitlement with folks, and they don't necessarily appreciate or concern themselves with what goes on behind the walls to make it happen," he says. "It's not an area where success leads to respect."

However, success quickly can lead to failure. Lack of awareness means difficulties funding critical security projects and, eventually, problems keeping the company secure. It's a vicious cycle, but one you can break by taking a few simple steps to keep yourself and your organization's security needs uppermost in top management's minds.

## 1. Get a dialogue going.

"It follows that if upper management hasn't heard from you and has no idea what you do, it'll tend to resist giving you more money to do it," says Steve Crutchley, founder of 4Front Security, a consulting firm.

Users agree. "You need to develop a collaborative relationship with the business side," Phillips says. "Tell what you're doing, and more importantly, ask how you can help them help the business."

Brian McEvoy, systems organization manager for PLM Solutions, an EDS line of business in Cypress, Calif., has put procedures in place to do just that."I meet with key users in sales and development if we're contemplating a security change," he says. "I tell them what I'm planning and ask their advice. They communicate with their downstream people, get the feedback, and we discuss it and make it happen."

This process worked well when the Bugbear virus appeared in the fall, McEvoy says.

To combat Bugbear, McEvoy wanted to push out Microsoft Internet Explorer 6 to everyone. But upon contacting his advisers on the business side, one came back immediately and said Internet Explorer 6 presented a problem because the company was using a product that had not been certified for that version of the browser. They asked us to hang on until they got it certified. Those guys scrambled, got it certified within two days, and then we did [the upgrade], he says. They appreciated the heads-up, I appreciated the feedback, and we avoided some problems.

# 2. Make security a service.

Crutchley says management tends to view security as "a grudge spend,"

something it has to pay for without really understanding why. Security professionals sometimes underscore this perception by issuing edicts and policies without fully explaining the need or the business impact.

"Some security guys just sit in their ivory towers and dictate policy and direction for the organization," Phillips agrees. "That doesn't work. Organizations are built on trust and credibility, and security is no different."

Business has to view security as a service, just like human resources or accounting, McEvoy says. "We've worked hard over the years to project that image. Rather than coming in as Big Brother, we come in and explain, "You're going to get hurt if your machine is infected, and you're going to be embarrassed. So here are some tools we can give you to protect yourself." Once they see you as a partner, it works out," he says.

## 3. Do the math.

Security professionals need to set needs and expectations in terms that business users understand, McEvoy adds. This means analyzing risk and return, not just in technical terms, but in dollars and cents.

"We sit down together with the bean counters and assess risk," he says. "Say it's going to cost us \$200,000 to get this security product in place. We weigh that cost against the risk and make the decision based on both financial and technical risk. It's simple math. Here are the risks, here is the probability, multiply one by the other and you come up with a number. There's no arguing with that."



# 4. Show return on investment.

Management also has to be able to see what it's paying for, McEvoy says. A good way is with executive-level reports, many of which security tools generate.

"We send weekly reports to upper management to let them know that over the past week, we've blocked so many viruses or stopped so many intrusions," he says. "It makes security more concrete and shows them exactly where all that money has gone."

It also shows that all has not been quiet on the security front just because no disasters have occurred. "On the contrary, it underscores the fact that we haven't had to waste money or lose productivity," McEvoy adds.

# The payoff

Because he's followed these steps, McEvoy says he seldom faces resistance to security spending and gets respect from his business peers and top managers.

"I'm putting in a request now for maintenance payments on one of our security products," he says. "I anticipate gasps and gulps, but I don't anticipate not getting it pushed through because we have a track record to show what it's doing. They know their money isn't just going into a black hole."

Cummings is a freelance writer in North Andover, Mass. She can be reached at jocummings@attbi.com.

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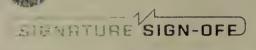
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industry leading platforms that meet
today's and tomorrow's network demands.





Jan. 10 Wireless network provider Motient, one of two wireless data service providers for Research In Motion's BlackBerry handheld devices, files for Chapter 11.

> Jan. 14 Novell announces comprehensive security suite, resurrects BorderManager and introduces its focus as a security company.

> > Jan. 17 Cable & Wireless gets OK from bankruptcy court to buy Exodus Communications and finalizes purchase Feb. 1.

Feb. 4 Enterasys Networks postpones the spinoff of network management software subsidiary Aprisma; it reports that it is under SEC investigation.

In a hopeful economic sign, Cisco beats second-quarter revenue expectations by \$300 million.

Feb. 7

Sun rolls out storage hardware and management software, indicating its intent to manage and support multivendor storage.

Feb. 11 Microsoft and IBM launch the Web Services Interoperability Organization for Web services standards development. Sun is notably

absent from roster.

March 1

Microsoft pushes back the release date of Windows .Net Server by six months.

American Express hands over its IT operations to IBM in an outsourcing deal valued at \$4 billion.

March 4

Verio closes data centers and lays off staff in more bad news in the hosting market.

Verizon cuts 10,000 workers, adding to the 29,000 employees it let go in 2001.

March 8 Sun files an antitrust law-

suit against Microsoft, stemming in part from Microsoft's decision to eliminate a Java Virtual Machine from Windows XP; pretrial motions begin in December.

SEC begins inquiries into WorldCom and Qwest accounting practices.

April 1 Gigabit

Ethernet prices free fall in the wake of several product announcements.

April 3

WorldCom cuts 6% of its U.S. workforce, eliminating 3,700 positions from its data services division.

Rick Belluzzo, a key force behind the growth of Microsoft's .Net efforts, steps down as president and COO as part of a reorganization aimed at giving greater autonomy to product group executives.

April 5

Enterasys indicates it might have to restate earlier earnings, and top executives step down; layoffs follow.

May 2

Siemens absorbs the voice division of Unisphere Networks, a company it funded three years ago. Just weeks later, Juniper Networks grabs Unisphere from Siemens.

> **May 13** HP launches merged company and outlines product road maps.



Fiorina and Capellas

May 20 Dell enters stackable Layer 2 Ethernet switch market with three switches for midsize businesses.

June 4

HP sells its middlewar assets as part of an ef to attain profitability fo software unit.

June 26

WorldCom admits acc irregularities, fires CF Sullivan and gives 17,0 ers their walking pape meantime, the SEC su WorldCom for fraud a House subpoenas con executives.



### February May January March



Jan. 28 Global Crossing files for Chapter 11.

IBM CEO Lou Gerstner announces his retirement, effective March 1; he names Sam Palmisano to fill his shoes.



Feb. 13

Network Associates sells its Gauntlet firewall, VPN software and appliance products to Secure Computing for an undisclosed sum.

Feb. 20 -

IBM announces new software, storage and servers for grid computing, and promises to grid-enable its entire product portfolio. It will commit \$4 billion to grid computing in August.

Feb. 26-

Network Associates gives up attempt to sell its PGP encryption products and instead puts them in "maintenance mode."

March 12 Mainframe software vendor Compuware sues IBM for unauthorized use of its source code and for antitrust violations.

House begins inquiry into Global Crossing's accounting practices.

March 19 HP and Compaq shareholders OK merger plans.

Novell reorganizes into six groups.

March 22

Metropolitan Ethernet provider Yipes Communications files for Chapter 11.



March 26 -

SEC begins probing Network Associates over accounting practices from 2000.

April 11

The W3C begins hammering out a formal framework for Web services; while IBM, Microsoft and VeriSign publish the WS-Security Web services security specification that OASIS picks up in June for review.

April 16 IBM and Hitachi reveal cooperation on several storage R&D initiatives.

April 19

Users get Sun to reconsider its plans to halt development of a ersion of the Solaris operating system for Intel's 32-bit chip architecture.

April 26 Aprisma lets go of 15% of its workforce, while Enterasys dips into Aprisma's cash.

April 30

HP board member Walter Hewlett loses battle to block Compag acquisition as judge dismisses his lawsuit.

WorldCom CEO Bernie Ebbers resigns; John Sidgmore takes over.



May 22 emerges from

Chapter 11, with an \$81 million cash infusion, and merges with Interpath.

May 24 -

Cisco quietly reorganizes, shaving the 11 technology groups formed last August into eight.

May 27 -

Storage vendor consortium submits the "Bluefin" storage management specification to the Storage Network Industry Association.

May 31 Dell buys Plural to boost its services business.





**July 17-**Symantec ent three security record quarte

HP and EMC age APIs; HP with IBM and

July 25 -Bucking the lay developer posi

July 29 -Qwest admits: the last three y



#### A month-by-month look at the year's highs and lows.



EMC says it will lay off approximately 1,300 of its 17,000 employees worldwide as weak IT spending forces down its third-quarter results.



A judge approves last year's proposed antitrust settle-

ment between the federal government and Microsoft.

#### **Nov. 11**

Verizon reveals plans to offer business long-distance in the Northeast beginning first quarter of 2003 and nationally during the next two years.

**HP President Michael Capellas** quits. One week later, he grabs the CEO spot at WorldCom.

#### Nov. 13 Microsoft backs off commitments to synchronize desktop and server software releases.

FCC OKs Comcast buyout of AT&T Broadband, clearing the way for creation of the largest cable company in the U.S. Two

days later, with the sale complete, AT&T CEO C. Michael Armstrong becomes Comcast chairman, David Dorman becomes AT&T CEO, and Betsy Bernard becomes president.



Software. Dec. 9

Dec. 6

a joint venture, called Cometa Networks, for offering IEEE 802.11 wireless Internet services.

IBM shells out \$2.1 bil-

lion to buy development

tool maker Rational

Microsoft begins tweaking its licensing programs to address the confusion and financial burdens it has admitted creating with its new Licensing 6.0 plan.

#### Dec. 12

EDS lands a \$4.5 billion outsourcing contract to provide Bank of America end-toend network management services over the next 10 years.

#### Dec. 13

Two U.S. senators say they will introduce a bill when the 108th Congress convenes next month to assign portions of the wireless spectrum to wireless Internet devices, which currently operate in unlicensed frequencies.

Corio acquires the assets of Qwest's ASP business.

#### Aug. 8

WorldCom discovers an additional \$3.3 billion in accounting errors; restates earnings for 2000.

FTC mandates that Microsoft stop misrepresenting Passport's security and subject its security program to an independent audit.

#### Aug. 12

HP gets contract to supply centralized end-user technical support to 61,000 Microsoft employees, vendors and contractors.

Sun launches full-featured Linux on Intelbased servers.

#### -Aug. 13

August

Enterasys sells Aprisma unit to Gores Technology Group for an undisclosed sum.

Intel backs away from the management software market by spinning off its LANDesk line.

AT&T wins a high-visibility contract to support the federal FirstGov.gov portal, one of the most-visited Web sites.

#### Sept. 16

**EMC fortifies its AutoIS** strategy for enabling the automated provisioning of capacity from a pool of multivendor storage devices.

#### Sept. 17

IBM and Intel team to develop blade servers.

#### Sept. 18 The Bush

unveils its long-awaited National Strategy for Securing Cyberspace.

administration

#### Oct. 14

Novell previews Nakoma, its next-generation Net-Ware version aimed at challenging Microsoft's .Net.

#### Oct. 18

Dell regains the undisputed top spot as the world's leading PC vendor,

according to market researchers.

#### Oct. 21

A massive distributed denial-ofservice attack on 13 core Internet root servers fails to stop Internet

traffic.

October

Nov. 18

November

December

#### deals to acquire announces

July

t reorganizes.

July 8

Itanium 2.

Services.

July 15

framework.

July 9

Intel ships next-

Yipes emerges

from Chapter 11 to

as Yipes Enterprise

Dell rolls out a sys-

tems management

July 21

files for

WorldCom

Chapter 11.

serve 10 markets

generation, 64-bit

Jans to share storwith similar deals in coming months.

ud, Microsoft opens 5,000 Ir hiring in next year.

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) for

Aug. 13-Dell unveils several Linux cluster offerings and services.

#### Aug. 20

Cisco jumps into the world of Fibre Channel storage switches.

Nortel cuts third-quarter revenue forecasts and 7,000 jobs as

one result, bringing total

workforce reductions to

#### Sept. 19

Sun lays out product directions for the next several years under its N1 initiative for making network management easier.

September

WorldCom prepares to disclose more accounting problems, bringing the total misplaced money to about \$9 billion.

Cisco drops Dell as a reseller, ending a yearsold arrangement that predates Dell's entrance in the switch business.

#### Sept. 23

HP and Microsoft create a \$50 million technology, sales and services alliance for .Net.

C&W ditches its domestic data customers, selling its customer list to New Edge Networks.



#### Sept. 25

In an SEC filing, HP reveals it will cut an additional 1,800 employees, for a total of 16,800, by the end of its 2003 fiscal year.



SBC reveals plans to cut 11,000 workers and slash capital spending in 2003 by about \$1 billion. Early in the year, the Bell operating company cut 10,000 workers.

#### Sept. 30

HP files patent infringement charges against EMC, regarding Symmetrix, Clariion and TimeFinder wares.

#### Oct. 22 -In its fifth 2002

acquisition, Cisco buys intrusiondetection software maker Psionic Software for \$12 million in stock. Earlier deals: Andiamo Systems, AYR Networks, Hammerhead Networks and Navarro Networks.

#### Oct. 28

IBM forms new division to focus on autonomic computing.

EMC launches a Dell co-manufactured midrange storage array.

#### Oct. 31-

IBM outlines plan to pump \$10 billion into on-demand computing initiative.

HP unveils its road map for the Adaptive Management Platform it says will create networks that provide resources on demand for applications.

#### Nov. 19 -The Liberty Alliance



its network identity specification and solicits public comment

#### Nov. 26

Enterasys restates its 2001 financials, decreasing previously reported year-end revenue by \$78 million and net loss by \$76 million.

WorldCom settles SEC civil lawsuit over its accounting practices.

#### Nov. 27

Internet backbone provider Level 3 Communications agrees

Dec. 16 -

to buy assets of bankrupt network provider Genuity.

## Computer Associates spells will combine

out plans for what Cisco products of the most comprehensive product suites in the emerging security information management market.

#### Dec. 17 Cisco, SBC strike a three-year accord under which the Bell appears to be one with its business services in outsourced managed offerings.

Most members of WorldCom's board resign fellowing count approval of Michael Capellas as the new charman and CEO. The board new comprises and v recently approve ed members

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# ENECUTIVE PROFILES.



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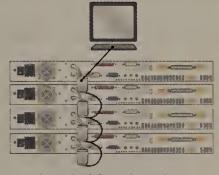
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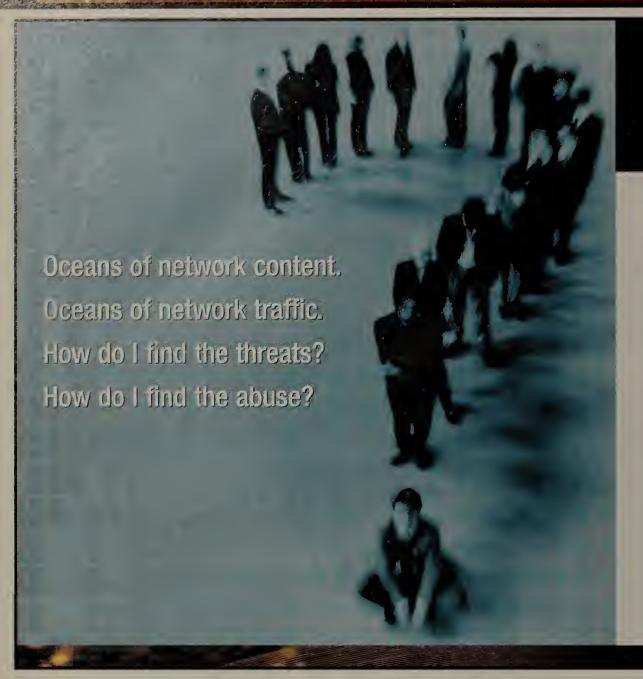
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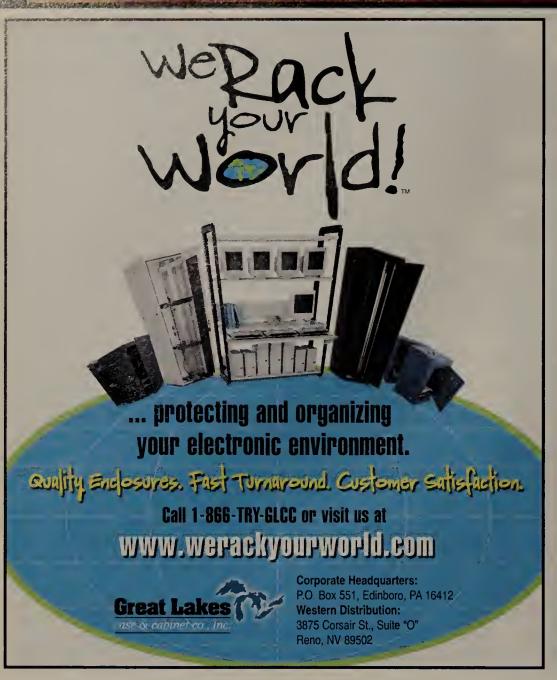
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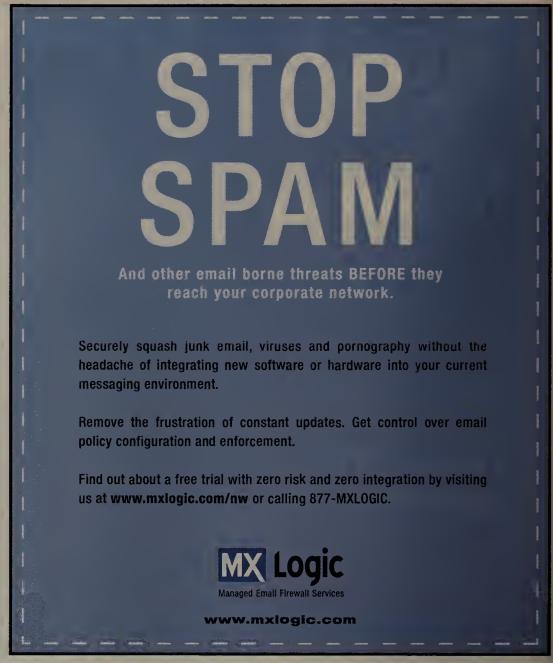
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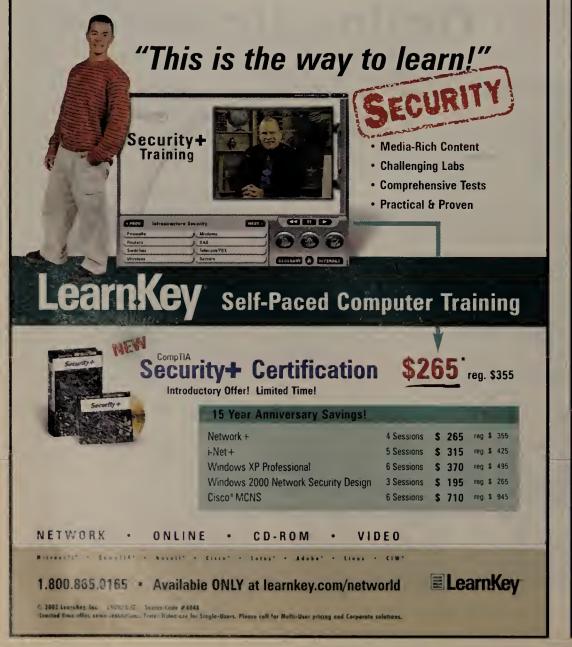
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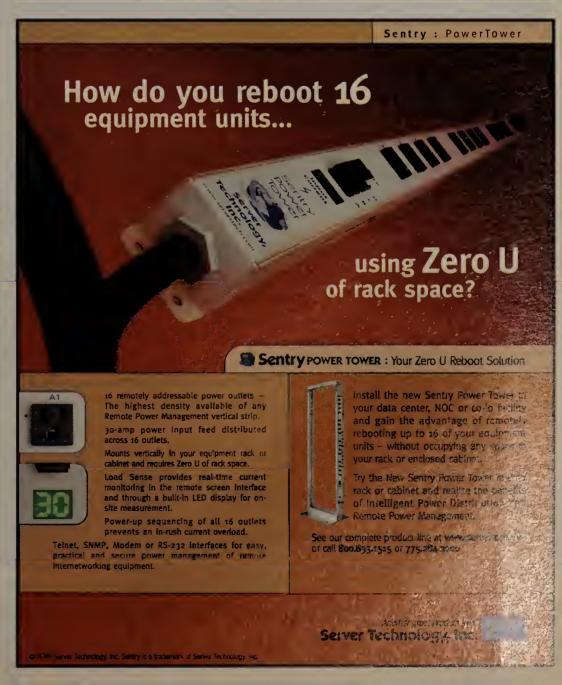
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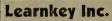
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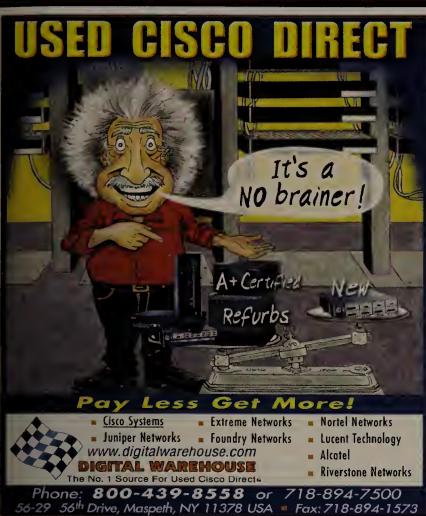
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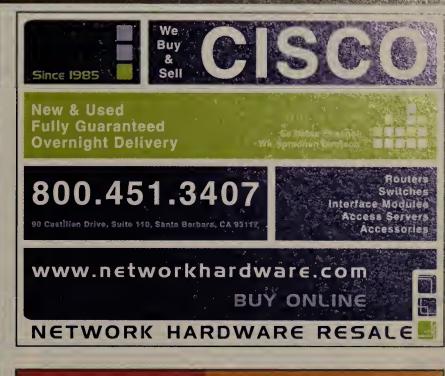






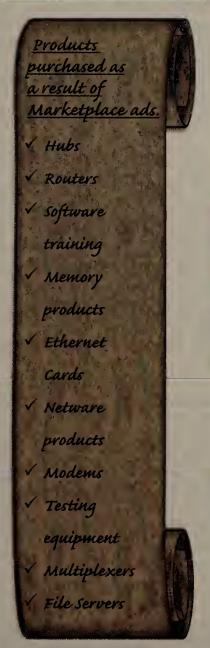








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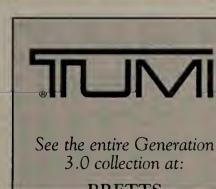




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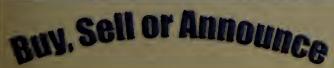


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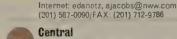
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